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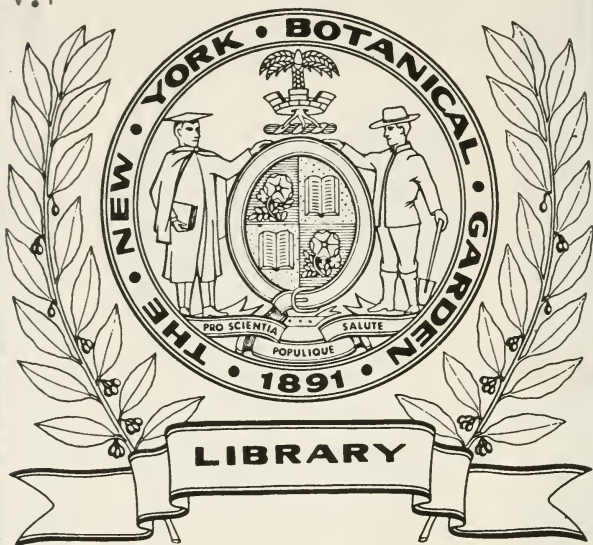
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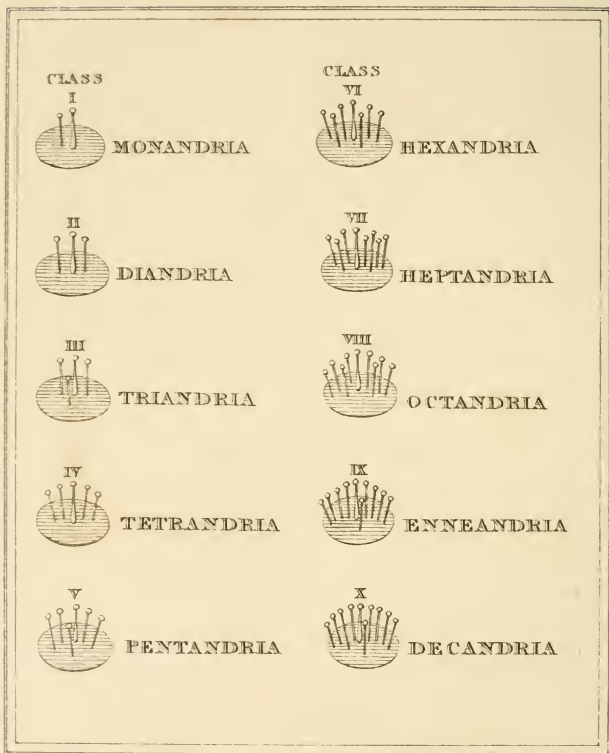


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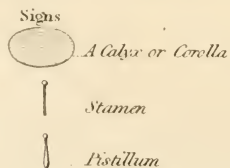
Mary Polk Stuart
from her Father
1034.

Bot

LINNAEAN SYSTEM



THE CHARACTER OF THE FIRST TEN CLASSES



ELEMENTS
OF THE
SCIENCE OF BOTANY,

AS ESTABLISHED
BY LINNÆUS;

WITH
EXAMPLES TO ILLUSTRATE THE CLASSES AND
ORDERS OF HIS SYSTEM.

Third Edition.

VOL. I.

LONDON:

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FOR

J. MURRAY, FLEET-STREET,

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1812
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DEDICATION.

*To Mrs. N***.*

THIS little book is expressly made for your AMELIA, under your direction, to awaken her mind to the contemplation of Nature.

The use of natural history, in general, is to enable us to distinguish one body from another, and to know their properties: and if Botany, which is one branch of it, had no other advantage than that of giving perspicuity and order to our thoughts, a moderate proportion of time in early life would be well employed in the pursuit. To facilitate this branch of knowledge, the celebrated Linnæus has artificially arranged the vegetable kingdom into twenty-four great divisions, or classes, of which I have given examples in each, accompanied with such amusing or illustrative facts as may serve to make the subject more interesting or impressive. In each class I have also given one plant, either a native of our

own country, or such as is familiarly known, that the flowers may be referred to without inconvenience ; for all knowledge worth possessing, must be derived from the source, and be acquired by ourselves. Of the English plants, common wild flowers have been preferred, that, in the pursuit of this delightful study, exercise and contemplation may be united ; for it is in the country and in the fields that the heart is made better, though in great cities the wit may be improved. That my Niece may possess the advantages of both, is the sincere wish of

Your affectionate brother,

R. D.

ADVERTISEMENT

TO THE

THIRD EDITION.

THIS Book, which was begun as an amusement for a child, has imperceptibly become an amusement to myself, and, in the progress of investigation, I have overstepped my original plan. It is now, therefore, calculated for more advanced years; and though I am not sensible of any difficulties in language which are not sufficiently explained, yet some facts may require more thought and reflection than the gaiety of youth, with its amusements, may stay to contemplate. If this should prove to be the case, they may be passed by, and the classification only attended to.

The references to original passages in the learned languages are printed to make the book more acceptable to a Lady to whom I have the honour of being known, whose erudition has placed her on an eminence ; but whose learning is yet secondary to the other qualities of her mind.

INTRODUCTION.

As plants are generally reproduced by seed, Linnæus chose the parts necessary to that end as the basis of his artificial system of Botanical arrangement. The parts of fructification he distinguishes into seven kinds, which may be enumerated in the following order.

CALYX, or flower cup, as seen in the green tubular part in the Clove-pink.^a This part in different flowers is various in shape and structure, in some it is permanent till the seed is ripe, as in the Dead Nettle; in others it falls before the flower is

^a The colour of the Calyx is usually green; nevertheless in some plants it is of other colours; in the pomegranate it is scarlet, in the *Holmskioldia* and *Fuchsia* it is a bright crimson.

That part which surrounds the flower is distinguished in the language of Botany, by the general term *Perianthium*, and the word CALYX may be considered as only having a more precise and technical meaning, under which head Linnæus has distinguished seven kinds.

1 CALYX, properly so called, as in the Clove-pink.

2 INVOLUCRUM.

5 GLUMA.

3 AMENTUM.

6 PERICHÆTIUM.

4 SPATHA.

7 VOLVA.

See examples in Class II. VII. IX. X. XVI. XXIV.

well expanded, as in the Poppy ; and some flowers appear to be wholly without it, as the *Embothria*.^b The next part is called by botanists the *COROLLA*, which is familiarly known to be white or red in the Rose, and commonly called the flower;^c in some plants this part is also wanting, as in the *Hippuris*, Pepper, Misseltoe, &c.

In the centre of the Corolla there are two parts on which the fructification and reproduction of the species more particularly depend: in the Lily they are remarkably conspicuous. They are named respectively, *STAMEN* and *PISTILLUM*. The Pistillum produces the seed at the base; and the use of the stamen is to perfect that seed, so that it may have a principle of life to vegetate and reproduce other plants of the same kind.

The other three parts are, the seed, called, in the language of botany, *SEMEN* ; the seed-vessel, called

^b Of the *Embothria* there are four species. The Tulip and the Lily have been supposed to be without a Calyx, but Jussieu, a man of the highest authority in the science of Botany, has determined these flowers to be without Corolla, and that part which has been usually called a Corolla to be no other than a Calyx.

^c The leaves that compose the corolla are called Petals, and are usually of the colours, white, yellow, red, or blue, separate or combined; but sometimes they are green, as in the *Tuberous Moschatell*, the *Herb Paris*, the *Corræa virens*, &c.; and the *Green Hellebore* exhibits a curious metamorphose, the Petals of which are first white, then green, and afterwards change into a Calyx.

by the general name *PERICARPIUM*;^d and the base of the flower, named *RECEPTACULUM*, as shewn in the example of the Dandelion, in the plate to illustrate the character of Class XIX.

Thus they may be arranged, with their distinctive botanical names, Calyx, Corolla, Stamen, Pistillum, Pericarpium, Semen, Receptaculum.

Plate I. exhibits a Stamen and a Pistillum, each subdivided with their respective botanical names. The Pistillum into three parts, *GERMEN*, *STYLE*, *STIGMA*; of these parts, the Stigma, and the Germen which contains the embrio seed, are indispensable; but the Style is often wanting, as in the Grass of Parnassus, Poppy, &c. The Stamen is divided into two parts, *FILAMENT*, *ANTHERA*; but that which is essential to the fertilizing the seed, is an apparently fine dust, or powder, contained in the Anthera,

^d The word *Pericarpium* expresses whatever surrounds the seed, from a similar etymology with the word *Perianthium*, and the scientific name of this part is *CAPSULA*: Capsula, therefore, may be considered as a generic term, and Linnæus has arranged seven kinds of coverings under this head, by these names:

1 *CAPSULA*, properly so called, a dry seed vessel of a woody coriaceous or membranous texture, as the fruit of the Tea, *Cyamus nelumbo*, &c.

2 *SILIQUA*, Pod.

5 *POMUM*, Apple.

3 *LÉGUMEN* (no English synonyme.)

6 *BACCA*, Berry.

4 *DRUPA*, Stone fruit.

7 *STROBILUS*, Cone.

See examples in the Illustration of the Orders of Class XV. and in Class II. V. XIII. XVII. XXII.

called POLLEN, which, by falling on the Stigma of the Pistillum, is the cause of complete fructification.^e

Upon these two parts alone, Linnæus established the principle of his classification by which he has made a Botanical Dictionary, that enables you to find with more facility any plant that is described by another, or to insert one yourself, with more certainty of its not being mistaken, now, or at any future time: this is the great and principal use of his system of arrangement.^f

^e Linnæus has thus expressed his opinion on this subject. "While plants are in flower, the pollen falls from the antheræ, and is dispersed abroad. At the same time that the pollen is scattered, the stigma is then in its highest vigour, and for a portion of the day at least is moistened with a fine dew. The pollen easily finds access to the stigma, where it adheres, and being mixed with the fluid of the stigma is conveyed to the rudiments of the seed."

^f The ancient Botanists knew no regular system of Classification; they collected in Chapters or in Sections those plants which appeared to them to resemble each other in the greatest number of relations. It is in this manner that Theophrastus,* Dioscorides,† and other authors, who are considered as systematic botanists, have arranged Vegetables. The single mark which characterises the Class among the moderns is arbitrary, and therefore different in different systems. In Tournefort, the petals; in Ray, the fruit; and in Linnæus, the stamina, furnish Classic characters.

* Theophrastus, the father of systematic Botany, was a native of Eresus in Lesbos, and died at the very advanced age of 107, in the year 288 before Christ.

† Dioscorides was a Greek physician, supposed to have

To distinguish the GENERA or families of Plants, which have their foundation in nature, and which Linnæus calls his natural characters, he takes from all the seven parts of fructification already enumerated, and from no other.^z Those of the SPECIES, from all the other parts, as the root, trunk, leaf, buds, and habit; and even from some circumstances attending the parts of fructification if they do not enter into the character of the genus or Class.

To prevent the Stamen and Pistillum in Plate 1, from being considered as their common character and appearance in all flowers, rather than as an illustration of those parts, I have added two other Plates containing Stamina and Pistilla from various plants, upon an enlarged scale, to shew the variety that may be expected to occur in the progress of investigation.

Many experiments have been made to ascertain the importance of the Stamina and Pistilla to the production and ripening perfect seed. In the middle of the last century, in a hot house at Berlin, there was a Date Palm which blossomed very luxuriantly every

lived in Rome in the age of Nero, who ceased to reign A.D. 68.

^z Linnæus defines the parts of fructification to be—"the temporary parts of vegetables destined for the reproduction of the species, terminating the old individual and beginning the new." This definition, though applicable to herbaceous plants, cannot with equal propriety be extended to trees.

year with flowers containing Pistilla only,^h but never produced any seed or fruit that came to perfection. In a hot-house in Leipsic there was one of the same species that produced blossoms only with Stamina. In the year 1749, a branch of this tree in flower was sent from Leipsic to Berlin, and suspended over the Palm-tree there, that produced only Pistilla, and that year, for the first time, it bore perfect fruit and seed; some of which were sent to Linnæus in Sweden, who raised other trees from them at Upsal.

The importance of these two parts of a flower to the maturing the fruit of the Palm was known among the ancients, and the trees bearing flowers with Stamina only, were always planted among those that bore the Pistilla, that the Dates might come to perfection; and among the moderns, where this fruit is an article of food, it is now not less carefully attended to. M. Michaux, in his Travels in Persia, has observed, that in the contentions and civil commotions in that country for the dominion of the empire the different parties which were alternately victorious, in order the more speedily to reduce the inhabitants of the provinces, burned all the Palm-trees that produced Stamina; and famine would have been the consequence had not the Persians previously taken the precaution to preserve a great quantity of the Pollen for the pur-

^h This plant bears its Pistilla on one tree, and the Stamina on another, and is of the Class Dioecia of this system.

pose of fructifying the fruit-bearing trees which produce only Pistilla. It also appears from the same author, that the Pollen, which had been preserved for this purpose, had been kept for eighteen years without losing its fertilizing property.

To illustrate the importance of the Stamina and Pistilla, Linnæus made a decisive experiment on the Horned-Poppy. He stripped off the Stamina from two separate flowers, and afterwards, from a distance, brought the Pollen of a third and sprinkled the Stigma of one of these which he had so deprived of its Stamina: the seed of this Poppy came to maturity, which he so fertilized, and the other did not; the experiment was frequently repeated with the same result.

It is upon the knowledge of these principles of nature that our countryman, Mr. Andrew Knight, has produced new apples, and also some varieties of leguminous vegetables. By taking the Pollen from one species and fertilizing the Pistilla of others of a different kind, but of the same natural Genus, he has produced a pea of a larger and finer sort than any we were before acquainted with.

THE STAMINA and PISTILLA being demonstrated to be essential parts of a plant, Linnæus made them the basis of his system, which he divided into twenty-four classes; twenty-three of which have their distinctions founded on the number, and situation or arrangement of the Stamina; and the twenty-fourth is made to include all those plants which, from the ob-

scurity or uncertainty of their fructification did not allow of being included in either of the preceding.

The first eleven classes depend entirely upon the number of the Stamina; as Class I. one Stamen; Class II. two Stamina; Class III. three Stamina, &c.

Class XII. depends upon the number, with the additional circumstance of their growing out of the Calyx.

Class XIII. depends on the number, and their growing out of the Receptaculum.

Class XIV. and XV. depend on the relation of the Stamina among themselves. The first of these has four Stamina, two of which are long and two short; and the second has six Stamina, of which four are long and two short.

Class XVI. XVII. XVIII. depend upon the Stamina being more or less united, as in class sixteen all the Stamina are united together in one sheath; in class seventeen the Stamina are divided into two quantities; and in class eighteen, into more than two.

Class XIX. has the upper part of the Stamina, usually the Antheræ, united into a tube, and the lower part or filaments separate.

Class XX. has the Stamina situated on the Pistillum. These seven classes are illustrated by plates prefixed to each class respectively.

Class XXI. comprehends those plants where the Stamina grow in separate flowers from those that produce the seed, yet both sorts of flowers growing at the same time on the same plant, as in the Cucumber.

Class XXII. includes those plants where the flowers that bear the Stamina grow on separate plants from those that produce the seed, as in the date-bearing Palm already mentioned.

Class XXIII. comprehends those plants the Stamina of which grow sometimes on separate plants, sometimes in separate flowers on the same plant, and sometimes in the same flower with the Pistilla.

Class XXIV. includes Ferns, Mosses, Liverworts, Flags, and various kinds of sea-weeds, and Fungi.

The Linnæan Names of these Classes are,

I. Monandria.	XIII. Polyandria.
II. Diandria.	XIV. Didynamia.
III. Triandria.	XV. Tetradynamia.
IV. Tetrandria.	XVI. Monadelphia.
V. Pentandria.	XVII. Diadelphia.
VI. Hexandria.	XVIII. Polyadelphia.
VII. Heptandria.	XIX. Syngenesia.
VIII. Octandria.	XX. Gynandria.
IX. Enneandria.	XXI. Monoecia.
X. Decandria.	XXII. Dioecia.
XI. Dodecandria.	XXIII. Polygamia.
XII. Icosandria.	XXIV. Cryptogamiâ.

Besides these divisions, Linnæus made a secondary artificial arrangement or subdivision of these Classes into Orders.

The Orders of this first thirteen Classes are established upon the number of the Pistilla or Stigmata,

and are shewn by a marginal reference in the letter-press accompanying each Class.

The Orders of Class XIV. and XV. are characterized by the manner of producing their seed, as shewn in the two plates prefixed to those classes.

The Orders of Class XVI. XVII. and XVIII. are founded on the number of Stamina which compose them.

The Orders of Class XIX. are marked by the united or separated, barren, fertile, or abortive nature of the florets; and each is illustrated in its proper place.

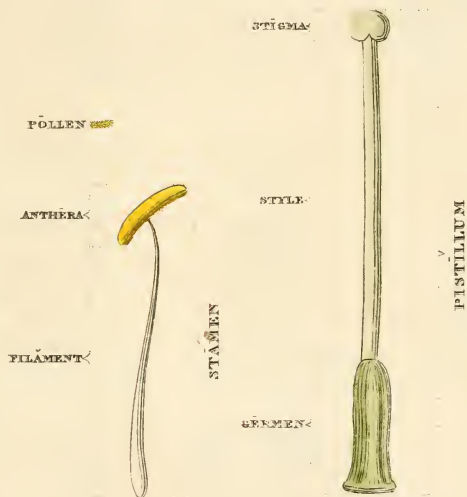
The Orders of Class XX. XXI. and XXII. are almost entirely distinguished by the number of their Stamina.

The Orders of Class XXIII. are distinguished upon the principles of the two preceding classes, and being three, are called Monoecia, Dioecia, Trioecia.

The Orders of Class XXIV. are professedly natural, and in the Linnæan arrangement are four; Ferns, Mosses, Flags, and Fungi.

At the top of each Plate is engraved the number of the Class, and Order, and English name of the plant; and underneath its scientific or botanical name.

At the top of each page is the botanical name of the Class, and a marginal reference contains the scientific name of each Order, with an English explanation.



The POLLEN is an apparently fine dust contained in the Anthera.

STAMEN AND PISTILLUM

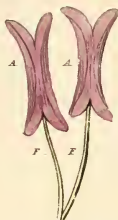
THE ESSENTIAL PARTS OF A PLANT



A Stamen of the
Fittulose Monarda



A Stamen of the
Tea-blossom



Two Stamens of the
Sweet-scented vernal-grass



A Stamen of the
Horned Pond-weed



The five Stamens of the
Globe Thistle, unfolded



A Stamen of the
Spring Crocus



A Stamen of the
Rose Bay



The united Stamens
of the Yew
1. A single Anthera enlarged



Stamen of the
Water Star-wort

A. Anthera. F. Filament.

STAMINA

SHOWING THE VARIOUS CHARACTER & APPEARANCE
OF THE ANTHERA IN DIFFERENT PLANTS.



PISTILLA

SHEWING THE VARIOUS CHARACTER & APPEARANCE
OF THE STIGMA IN DIFFERENT PLANTS.

MONANDRIA.

CLASS I.

ONE STAMEN.

This Class has two Orders.

ORDER I.

MARE'S-TAIL. This plant has only one Stamen and one Pistillum, and each flower produces only one seed. It is found in ditches and pools, and on the borders of slow streams; it is not very common, but grows in several parts of Norfolk, and in the neighbourhood of London. It blossoms in May and June.

MONOGY-
NIA.

One Pistil-
lum.

At the bottom of each leaf there is a small flower of the simplest kind, consisting only of one oval Germen without a Corolla, terminating in a thread-shaped pointed style, by the side of which stands one Stamen with a two-lobed anthera. When young this anthera is large and reddish, sitting close to the Germen without any filament, as in Fig. 1. Afterwards in a more advanced state the anthera is raised, supported on a filament and detached from the style, as in Fig. 2. As the parts of fructification often vary in shape and character in different stages of their growth, this may serve as an example, and perhaps in some cases prevent an unexpected difference of appearance in other plants, from being misunderstood.

The parts of fructification of this plant having no Corolla, in common language, may be said to be without a blossom; but in the Linnæan language of Botany the Stamina and Pistilla constitute the flower of the plant;^a and if a plant has the union of one Stamen and one Pistillum, that flower is said to be complete, in the botanical sense of the word, though it has neither Corolla nor Calyx; and on the other hand, if a flower has the most beautiful corolla that can exist and contains only Pistilla, or only Stamina, that flower is said to be incomplete. Thus the Hautboy strawberry has its corolla of white petals like other strawberries, but the Pistilla and the Stamina are not united in the flowers of the same plant, consequently these flowers are said to be incomplete.^b Nevertheless, from the generally received opinion of the Corolla being the flower, the description of Flowers in modern Botanical works often

^a Ray and Tournefort meant by the flower the coloured leaves of the plant; but since the introduction of the Linnæan system the petals have lost their importance, and are now only considered as a finer sort of cover, which is generally present, but not essentially necessary to the existence of the flower.

The leaves of plants being usually green, Botanists have given an unphilosophic distinction to the word colour by applying it only to yellow, red, and blue, or to their combinations. In an early state of vegetation almost all the leaves of plants are green, of different shades, but the common red beet, *Beta vulgaris*, the *Dracæna ferrea*, and some others, have their leaves of a dark purple.

^b This fact is of importance in the cultivation of Strawberries, concerning which gardeners are sometimes ignorant,

yields to the common acceptation of the word, even with those who adhere to the Linnæan system.

To this Order belongs the Genus *Maranta*, or Indian Arrow-root, of which there are five species, natives of South America, and cultivated in the West Indies. It is the root of one species of this plant, *Maranta arundinacea*, which, when bleached and pounded, makes the fine powder used as food by valetudinarians, though in Europe the flour of the Potato is often thought to be substituted for it.

British Plants of this Order.

Botanical Generic Names.	Common Names.
3 HIPPURIS	1 MARE'S-TAIL
2 SALICORNIA.....	2 GLASSWORT
d1 ZOSTERA.....	1 SEA GRASS-WRACK

for all the other varieties have complete flowers, and in this no difference is suspected; the consequence of which is, that large beds of Hautboy strawberries often blossom very finely, but yield no fruit, because the roots produced only Stamina, or only Pistilla, and no precaution had been taken to intersperse the two sorts, that the fructification might be complete.

Retzius says, that sometimes this strawberry has both stamina and pistilla united in the same flower; the same variation occasionally happens in the Fig, Hemp, Spinach, and other plants, whose primary economy, also, is governed by different laws.

^d The figures which precede the botanical Generic names denote the whole number of species of each Genus, according

ORDER 2.

DIGYNIA.

Two Pistilla.

WATER STAR-WORT is common in ditches and standing water, and blossoms from April to October; its upper leaves make a star-shaped appearance, from whence it has its name. Of this Genus there are two species, this, and *Callitriche autumnalis*.

Plants in this Class are not numerous, and there are none of English growth with ornamental or conspicuous flowers. The Cane or Indian Reed bears a beautiful crimson blossom, and the wild *Lopezia* of Mexico is an elegant flowering plant; but I have preferred the humble growth of our own country, by Mr. Sowerby's kindness, who has permitted me to use his *Indigenous Botany* upon this occasion, which, it is no flattery to say, is by far the most complete work of the kind ever published.

To prevent any mistake in the pronunciation of the botanical names engraved at the bottom of each plate, I have marked the quantity of the penultimate syllable, by which, our English pronunciation of Latin words is uniformly governed. The consideration of this circumstance is worth attending to in all Latin words of more than two syllables; for, of those con-

to our present state of knowledge; and the figures before the common names, denote the number of species found wild in Great Britain.

sisting only of two syllables, we have no guide to direct us; therefore of such words consisting of more than two syllables, if the last syllable but one, which is called the penultima, be marked (— long, then the English accent is placed on that syllable, but if the quantity be marked (˘) short, on this penultimate syllable, then the English accent is always thrown back on the preceding syllable, called the antepenultima, without any consideration of what may be the quantity of *that* preceding syllable, in Latin poetry.

CLASS I

ORDER 1

MARE'S-TAIL



HIPPURIS VULGARIS

CLASS I

ORDER 2

WATER STAR-WORT



CALLITRICHE AQUATICA

DIANDRIA.

CLASS II.

TWO STAMINA.

This Class has three Orders.

ORDER I.

ENCHANTER'S NIGHT-SHADE. This plant is so called, probably from its being found in shady damp places, in churchyards, where ghosts were supposed to haunt; and was therefore thought to be favourable to incantation. It blossoms in July and August; and the delicacy of the flower gives a ray of cheerfulness to the gloom of its natural situation.

Some plants blossom twice in a year, as is common between the tropics; others oftener, as the monthly Rose. The time of flowering is determined by the degree of heat which each species requires. The Winter Aconite and Snow-drop blossom in February. The greater number of plants during the month of May; and the compound flowers, as those of the nineteenth Class, chiefly in the Autumn.

MONOGY-
NIA.

One Pistil-
lum.

GIBBOUS DUCK-WEED. *Lemna gibba*. This plant grows in stagnant water in shady places, floating on the surface. It was put by Linnæus in the Class Monoccia, but has been removed here by Dr. Smith, from the parts of fructification being better understood; they are known now to be produced on the margin of the leaf, and were first discovered by Ehrhart at Hanover, in July 1779. Dr. Adams, a zealous English Botanist, devoted himself with great attention to this object, but unfortunately died without making the discovery. The interest he took in this pursuit, made him sometimes the sport of his friends, and to others, he appeared to be frivolously employed.

Every object in nature, philosophically considered, is equally wonderful and perfect, but the investigation of every object has not the same relation to the well-being of man, or his happiness in society; it is from the consideration of this principle, universally felt, though not always analyzed, that opprobrious and contemptuous epithets are bestowed on those who exhaust their time and attention in minute research. Dr. Adams, who only wished that he might live to see the blossom of the Lemna, by the many, would doubtless be considered as insane. He who spent twenty years from Spring to Autumn prying into stagnant ponds to make this discovery, might nevertheless, in himself, be highly gratified. Every succeeding day might present to his view the operations of nature, and the harmony of those laws which a mind

of quick sensibility sees constantly evolving. This research, therefore, as far as concerned the individual, might be as worthy and as honourable as the occupation of tracing obscurities in a dead language: but whatever may be Dr. Adams's merit, or whatever may have been his gratification, they were to himself alone; no one partook of his enjoyment, no one has been benefited by this appropriation of his time: yet a learned commentator, however numerous his absurdities, may amuse or entertain some portion of mankind; hence the naturalist who thus spends his time in rustic solitude is dismissed with contempt, while he who is only versed in Synonymes is treated with respect.

We value men by the use they are of to us, not to themselves: our happiness depends upon a reciprocal communication of benefits, and he who in any way acts in hostility to this principle must not be surprized to find, that he contracts the circle of his friends.

To appropriate with discrimination our time, our fortune, or our talents, with judgment suited to the occasion, is the criterion of a sound and healthy mind; and whoever employs either to obtain an object less worthy than the means, inevitably barters for his personal gratification, a proportion of his character in the estimation of mankind.

COMMON SPEEDWELL. *Veronica officinalis*
This plant is a native of Europe on dry sandy pastures and heaths; not uncommon in England. It

blossoms from may or June to August, or later ; the flowers varying in their colours, pale blue, pale red, and white ; but what is more remarkable, it has been found abroad with double flowers.

The leaves are bitterish and roughish to the taste, and formerly they were much recommended and used in Sweden and Germany as a substitute for Tea, than which they are more astringent, and less grateful.

As the botanical name of this plant, *Veronīca*, is usually pronounced as if the accent were on the two letters *on*, and is so taught in common books on Botany, I take this opportunity to remark, that there is no good authority for this pronunciation. If the word be derived from the Greek, which is most probable, then the *i* must be unquestionably long, and according to our English pronunciation the accent must be placed upon that letter. Gardeners in like manner pronounce Clēmatis, Erīca, Arbūtus, as if the accents were on the *a* in the first, on the *er* in the second, and on the *u*, long, in the third, which ought to be short, without sufficient reason for the deviation from classical authority. The Greek and Latin languages which are used and accommodated to the science of botany are too often corrupted ; but this is to be regretted, and the evil if possible ought to be diminished rather than increased.^e

^hTo enter into particular criticism on Botanical words, would look too much like pedantry in this place ; I shall there-

British Plants of this Order.

Botanical Generic Names.

Common Names.

2 CIRCÆA.....	2 ENCHANTER'S NIGHT-SHADE
3 LEMNA.....	3 DUCK-WEED
3 LIGUSTRUM.....	1 PRIVET
3 LYCOPUS.....	1 HOREHOUND
5 PINGUICULA.....	2 BUTTER-WORT
79 SALVIA.....	2 SAGE
21 SATYRIUM.....	4 SATYRIUM
13 UTRICULARIA.....	2 BLADDER-WORT
57 VERONICA.....	17 SPEEDWELL

ORDER 2.

SWEET-SCENTED VERNAL-GRASS blossoms in May and the beginning of June. Of this Genus there are three species; the other two are natives of the East Indies and New Zealand. DIGYNIA.
Two Pistilla.

The fragrance of new-made hay is said to be produced by this grass, but the opinion I believe is not very well founded. Towards the latter end of June and the middle of July, in Herefordshire and Wor-

fore only refer you to some judicious remarks on this subject, by Sir William Jones, Vol. II. page 3. 4to. edition of his works.

cestershire, this grass is brown and dry, down to the root, yet that sweet odour peculiar to hay while it is making is as powerful to the olfactory sense as in other counties, where the hay is made at an earlier season, when this grass, at the time of mowing, may be supposed to be in perfection. Another reason for objecting to the scent exclusively proceeding from this grass, is, that in meadows where it does not abound no diminution of fragrance is perceived in the harvest; it would therefore seem, under the most favourable circumstances, only to contribute its share, and not to be the sole cause of the fragrance of new-made hay. The sweet odour of this grass resides in the stem, more particularly in the joints, and not in the spike or flower. This, and *Bromus diandrus* are the only two British grasses which have fewer than three stamina, and are the only English plants of this Order.

ORDER 3.

No British Plant of this Order.

BLACK PEPPER. The different species of Pepper are very many. Professor Martyn enumerates sixty. They are all natives of the East and West Indies; a few in the islands of the South Seas, two or three of the Cape of Good Hope, but none of Europe.

Black Pepper is a shrubby plant, and grows spon-

TRYGY-
NIA.

Three Pis-
tilla.

taneously in the East Indies and Cochinchina. It is cultivated with such success in Malacca, Java, and especially in Sumatra, that it is from thence exported to every part of the world. It is exported also from Cochinchina.

White Pepper was formerly thought to be a different species from the Black; but it is nothing more than the ripe berries deprived of their skin by steeping them about a fortnight in water, after which they are dried in the sun. The berries falling to the ground when over-ripe lose their outer coat, and are sold as an inferior sort of White Pepper.

Black Pepper is the strongest and the hottest of them all; and is most commonly used for medical as well as culinary purposes. That which is called Cayan Pepper is produced from a plant in the West Indies, of a very different genus, called *Capsicum*, of which there are five species; and that particular species from which the Cayan is made, is *Capsicum grossum*.

Jamaica Pepper is the dried unripe fruit of the *Myrtus pimenta* of Linnæus, a plant of the twelfth Class of his system. It is a round fruit, with a duskish, hard, and rough rind, containing within it two black kernels of an aromatic smell and taste, approaching to that of Cloves, yet partaking, in some degree, of the odour and taste of all the other species, whence it has obtained the name of *All-spice*. The tree which produces it, rises to the height of thirty or forty feet; and in a rich soil, will grow even to the height of an hundred feet. The leaves are like those

of the bay, but of a much stronger aromatic smell; the flowers stand in bunches, and are of a greenish colour; these are succeeded by the fruit, which the Negroes gather before it is ripe, and dry it in the sun; in drying, it becomes wrinkled and brown, though before, smooth and green. The tree grows naturally in hilly places in the north part of Jamaica. The churches in the West Indies are usually adorned at Christmas with small boughs of Pimento as we decorate ours in England, at the same time of the year, with Holly and Ivy.

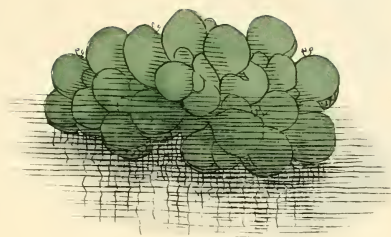
CLASS II

ORDER 1

ENCHANTER'S NIGHTSHADE



CIRCAEA LUTETIANA



Gibbous Duck-weed

LĒMNA GĪBBA
III
I



Common Speedwell

VERONICA OFFICINALIS

CLASS III

ORDER 2

SWEET-SCENTED VERNAL-GRASS



ANTHOXANTHUM ODORATUM

CLASS II

ORDER 3

BLACK PEPPER



PIPER NIGRUM

TRIANDRIA.

CLASS III.

THREE STAMINA.

This Class has three Orders.

ORDER I.

PAPYRUS. This plant is usually said to be proper to the Nile: it grows, however, not in the bed of the river, but in some small streams issuing out of it, some large stagnant lake or neglected water-course in its neighbourhood, in a depth of water not exceeding three feet. It grows also in Syria, in the shallow recesses of the river Jordan, and at the confluence of the Tigris and Euphrates. It is a plant tall and slender, of the rush kind, about ten or twelve feet high. The stem is naked, of a vivid green colour, and triangular in the lower part, at the top it has a bushy head, and at the bottom a few short sedgy leaves.^f

MONOGY-
NIA.

One Pistil-
lum.

As our knowledge of the different uses to which this plant was applied by the ancients, must be now derived from ancient authors, I will here translate

^f In the British Museum there is a good dried specimen of the plant.

part of a chapter of Pliny upon this subject, rather than be indebted to more modern compilations. This author, after speaking upon gums, in his thirteenth book, says—“ We have not yet touched upon marsh plants or on shrubs of the rivers; yet before we depart from Egypt, the nature of the Papyrus is also to be related, since, in the use of paper consists civilization and the retrospect of past events. Varro relates, that the invention of making paper from the Papyrus was found out during the conquest of Alexander the Great, when he founded Alexandria: before which time the use of paper did not exist.^g

“ The leaves of Palm trees were first used to write upon; then the inner bark, by Botanists called the *liber*, of certain trees; afterwards the public records were written on rolls of lead; soon after that private persons began to make use of linen cloth or waxed tablets for the same purpose, for we find in Homer table-books were even used to write upon before the time of the Trojan War. But while Homer

^g Although Pliny has here asserted, on the authority of Varro, that the use of paper made from the Papyrus did not exist before the foundation of Alexandria, *Antea non fuisse chartarum usum*; yet it would appear, from Isaiah, to have been applied to that purpose before he wrote his Prophecies, which is supposed to have been seven hundred years before the Christian Æra. Isaiah xix. 7. And what is more remarkable, the word in Hebrew signifying the Papyrus appears to have been derived from the use to which it was applied; as if its application to the making of paper were even anterior to its Hebrew name.

himself was writing, neither was that part all land in Egypt which is now known to be so, (as, within the district Sebennyitis only, all the paper was produced;) for since his time, the Nile by its inundations has caused mud to be accumulated, which has consolidated into land: for, from the Island where the Pharos stands, which is now joined to Alexandria only by a bridge, a vessel was a night and a day, with full spread sails before the wind, making that distance. Soon after, as Varro also relates, in the rivalry between Ptolemy and Eumenes to establish their respective libraries, Ptolemy interdicted the sale of paper; and the same Varro relates that the use of parchment was found out at Pergamus; afterwards that use became general,—on which the immortality of men depends.

“The Papyrus is produced in the marshes of Egypt, or in the still parts of the Nile itself, or where its inundation has made a temporary shallow, not exceeding two cubits in depth. The horizontal root is of the thickness of a man's arm; the stem of the plant is triangular, not more than ten cubits long, becoming slender towards the top, when it terminates in a bushy head like a Thyrsus; it has no seed, nor is any part of the head made use of, except the flower, to make chaplets for the statues of the Gods. The natives use the roots as wood, not only for fuel, but also to make vessels for domestic purposes. From the Papyrus itself, indeed, they make wicker boats; from the *liver* of the plant they make sails and coverings, mats and

cordage, and also wearing apparel. They chew the root also, crude or soddened, however, swallowing only the juice.

“The Papyrus is also produced in Syria, on the borders of the same lake with the sweet-scented reed; nor had King Antigonus any other cordage for his naval purposes than what he procured from thence before the introduction of the Spanish broom: lately it has been ascertained that the Papyrus is found growing in the Euphrates about Babylon, and the natives make the same use of it for paper; and even now the Parthians are fond of weaving letters in their clothes.^h The paper is prepared from the plant by dividing the pellicles into laminæ with a pointed instrument, at the same time preserving the strips as wide as possible.ⁱ”

From the inner rind of the bark of the middle part of the stem, the Egyptians appear to have made their paper. The laminæ or layers were separated with an instrument made for that purpose: these strips, which were usually about two inches and a half

^h “Et tamen adhuc malunt Parthi vestibus literas intexere.” This fact may probably refer to some ancient custom of the Parthians to manufacture the clothes they wore of the same materials as that on which they were accustomed to write, and the cloth so manufactured may have served for either purpose; and when this practice was no longer in use, they may have still continued to ornament their dress with worked letters instead of written characters.

ⁱ Pliny De gummi generibus, et Papyro. Leber xlii. Cap. 11.

broad, were squared at the edges so as to be like ribbons; they were cemented together by their edges, which were laid just over each other; similar strips were then laid transversely, to give the paper a proper substance and strength; when this was done a weight was placed upon them while moist, and they were then left to dry in the sun. The paper varied in quality and dimension according to the uses to which it was to be applied.

This paper was principally manufactured at Alexandria, from the exportation of which, the city was greatly enriched; and in the time of the Emperor Adrian, Vopiscus speaks of one Firmius, who boasted that he could maintain an army with his stock of paper.

The time, when paper made from the Papyrus was disused, is not known with more certainty than the time of its first introduction, and the truth is probably, that they were both so gradual that no date can accurately be assigned to either. As late as the end of the fifth century it was in general use in Europe; and in Italy it was occasionally used till the eleventh, and in France till the twelfth century,^k when paper made of cotton entirely superseded it. Afterwards paper made from linen was adopted, of which there is reason to believe none was entirely made of that material before the year 1367.¹

^k The Bulls of the Popes Sergius II. John XII. and Agrapatus II. were written in the eighth and ninth centuries on cotton paper.

¹ The first Paper Mill, in England, was erected in the year 1598.

From *Papyrus*, *paper* is derived; and from the ancient custom of writing on the leaves of trees, our book is said to be composed of leaves. *Libcr* is the inner bark of a tree, on which the ancients were also used to write; and *volumen* was the manuscript rolled up; hence our words *library* and *volume*.

British Plants of this Order.

Botanical Generic Names.	Common Names.
3 CROCUS	3 CROCUS
53 CYPERUS	10 RUSHGRASS
50 IRIS ⁿ	3 FLOWER-DE-LUCE
1 NARDUS.....	1 SMALL MATWEED
31 VALERIANA ^o	5 Velerian
69 SCIRPUS.....	22 GALINGALE

ORDER 2.

DIGYNIA.

Two Pistilla.

CAT'S-TAIL GRASS blows from June to October, and is common to every meadow, but not profitable to the farmer. This grass has a fibrous root when growing in pastures that are uniformly moist; but in dry situations, or such as are only occasionally wet, it acquires a bulbous root, whose inner substance

ⁿ The root of the *Iris* suspended in wine is said to give it a pleasant taste, and if put into beer will keep it from becoming stale.

^o Some species of this Genus have only one stamen.

is moist and fleshy; exhibiting a curious instance of the provision of nature to guard the plant against too sudden a privation of moisture from the soil.

MEADOW FOX-TAIL, *Alopecurus pratensis*, is a grass abundantly produced in rich moist soils, and on the whole, is perhaps as valuable as any we possess, springing early and producing plenty. In such situations it yields a heavy crop, and after it has been mown shoots freely, and the after-math is greedily eaten both by Horses and Cows.

CREEPING BENT-GRASS, *Agrostis stolonifera*, produces several varieties, which form an herbage in deep spongy meadows of considerable value, and often constitutes the chief part of the crop.

In Wiltshire, at a place called Orcheston, about nine miles from Salisbury, there is a small meadow of not more than two acres and a half which has been long celebrated for its extraordinary quantity of grass. The meadow is situated on a small brook, which is frequently overflowed, and sometimes continues so a great part of the winter: it has always the greatest burthen in a wet season. It is mowed twice a year, and the average crop is twelve tons of hay at the first mowing, and six the second, though sometimes considerably more.

The grass is of a sweet nature, so that all cattle and even pigs eat it very eagerly. When made into hay it is excellent, and improves beasts greatly; and horses will eat it in preference to corn mixed with chaff, when both are set before them together. This account

was published by the Bath Agricultural Society in 1792, and verified by the farmer who then occupied the land. The account the farmer has also given concerning the character of the grass, is, that it generally grows to the height of about eighteen inches, and then falls and runs along the ground in knots to the length of sixteen or eighteen feet, and that he has known instances of its running to the length of twenty-five feet.

This grass is thought to be, principally, some species of the *agrostis*, and probably a variety of the *Agrostis stolonifera*.

The Irish Fiorin-grass, which is so productive, and so materially contributes both to the quantity and the quality of the milk and butter of Ireland, is said also to be a variety of this grass.

Grass ° is the most general herbage on the face of the earth, which to a common observer might be supposed to be one uniform vegetable production, growing more or less luxuriantly in different soils; but upon more accurate and scientific investigation, there are found to be not less than a hundred and sixteen different species, natives of Britain alone. Most of the grasses possess the valuable property of increasing by their roots, as well as by seeds; and while the leaves, which form the herbage, are cropped

° To this Class and Order, with few exceptions, belong all the numerous tribe of vegetables, called Grasses, which are thus defined by Ray; "Plants having a round, jointed, and hollow stem, surrounded at each joint with a single leaf, long, narrow, and pointed, and whose seeds are contained in chaffy husks."

and eaten off, the roots multiply and spread under the surface of the ground; and thus by a double provision of nature, are secured the preservation and reproduction of the plant so essential to the animal world. Among this extensive tribe of plants no one has been found of a poisonous nature, except the *Lolium temulentum*, which is said to be intoxicating and pernicious in bread. The seeds of the smaller kinds are the sustenance of many birds; while the seeds of the larger grasses, as wheat, barley, rye, and oats, supply food for the human species. Among these the wheat is of the most importance, which, in its native state, is a very small seed; but by culture is enlarged, and the quantity infinitely increased. From a single grain, Mr. Charles Miller, of Cambridge, produced no less than three pecks and three quarters, weighing forty-seven pounds, by the following management: On the 8th of August he took up a plant of wheat which had been sown in the beginning of June, and divided it into eighteen parts, each of which was transplanted separately; about the latter end of September they were again removed, and divided into sixty-seven roots. In the end of the March following, and the beginning of April, they were separated into 500 plants, which yielded 21,109 ears; and thus this single grain produced 570,000 fold.

VIVIPAROUS FESCUE. This grass seems to make an exception to the general law of nature, of reproducing its like by seed; and, if what is known concerning it be correct, its habit is peculiarly interesting.

The seeds of many of the pasture grasses will often germinate in their husks by the successive showers and sunshine of Autumn, and especially those which spring up amidst the crags on the summits of mountains, where the sun has not been sufficiently constant to perfect their seeds. But this plant is not considered as simply viviparous by local and casual circumstances, but from the constitution of its nature; as its habits and character have been found hitherto, in all altitudes and situations, to be invariably the same.

Its progress of vegetation is, that in a very early stage, the terminal floret springs out and forms a leader, and in that situation it has three or four stipulæ wrapping it up at the base, but in succession the stipulæ become elongated, an inch or more, and form leaves to the leader, till all have shot out, excepting the Calyx, which remains unaltered; roots then occasionally spring out, the sprout afterwards drops from the Calyx, becomes rooted in the earth, constituting a separate and independent plant.

This Grass is indigenous to alpine situations; it is found in perfection in Scotland, on dry walls, and in the moist crevices of dripping rocks: I have myself gathered it at Lodore water-fall, near Keswick.

In considering plants according to their natural affinities, Linnæus divided the vegetable world into nine Casts or Tribes, of which *Gramina*, or Grasses, is one; and by analogy to the different ranks in society, he fancifully called them the plebeians of

the creation; while the Palms were the princes, and Lilies were the nobles. His tribes are thus arranged.

1. Palmæ. 2. Gramina. 3. Lilia. 4. Herbæ. 5. Arbores. 6. Filices. 7. Musci. 8. Algæ. 9. Fungi.

COMMON SUGAR-CANE. *Saccharum officinarum*. The Sugar-Cane is a native of Africa and Lower Asia, as well as the East Indies, and Arabia Felix: it is also said to grow spontaneously in America, but on the other hand it is asserted that it was not known in those regions till the Europeans colonized them. For a considerable time, however, it has been most industriously and successfully cultivated in the American Islands situated within the tropics, and it is from these plantations that we now derive the greatest part of our supply of sugar.

Very many vegetables secrete a sweet juice, easily converted into sugar. From a species of Maple, *Acer saccharina*, sugar is annually obtained in America in considerable quantities; in Mexico it is obtained from the American Aloe, *Agave Americana*; and at Kamshatska it is produced from the *Heracleum syphondylium* and *Fucus saccharinus*: many roots also afford sugar, as Carrots, Parsnips, &c.

The plant here represented produces the sugar in common use, which is prepared from its expressed juice boiled with the addition of quick lime, or common vegetable alkali, to saturate the superfluous acid. The boiling is repeated in smaller and smaller vessels, during which time it is often necessary to scum the impurities, and employ additional alkali; when

the juice acquires a due consistence, it is suffered to cool in a proper vessel, and the sugar concretes into a crystallized mass. This, after being separated from the molasses, is sold under the name of brown or moist sugar. This same sugar, more purified, becomes white, and being cast into conical moulds in the process, is then the loaf sugar of the shops.

Sugar, as a part of our necessary food, or as adding to our luxuries, is too well known to require any description: but its use as an aliment is by different medical men differently appreciated: while the great Boerhaave supposed it to have a tendency to emaciate the human body, John Hunter recommended it as a restorative in cases of great debility. However, in a moderate proportion there can be little doubt but that it is nutritious; for all animals, in their earliest state supported by milk, are nourished by a food containing a great proportion of sugar; and Dr. Cullen is of opinion that all food is nutritious in proportion to its saccharine quality: there are, however, well authenticated cases where an excess of sugar has been found to have done much harm.

British Grasses.

Botanical Generic Names.	Common Names.
35 AGROSTIS.....	11 BENT-GRASS
14 AIRA.....	8 HAIR-GRASS
6 ALOPECURUS.....	5 FOX-TAIL-GRASS

Botanical Generic Names.	Common Names.
3 ANTHOXANTHUM.....	1 SWEET-SCENTED VERNAL-GRASS
14 ARUNDO.....	5 REED
25 AVENA.....	6 OAT-GRASE
6 BRIZA.....	2 QUAKING-GRASS
25 BROOM-GRASS.....	11 BROOM-GRASS
20 CYNOSURUS.....	3 DOG'S-TAIL-GRASS
2 DACTYLIS.....	2 COCK'S-FOOT-GRASS
26 FESTUCA.....	12 FESCUE-GRASS
15 HOLCUS.....	3 HOLCUS
9 HORDIUM.....	4 BARLEY
1 KNAPSIA.....	1 ANGLESEA SAND-GRASS
5 LOLIUM.....	3 RAY-GRASS
14 MELICA.....	3 MELICA
12 MILLIUM.....	1 WOOD MILLET
4 NARDUS.....	1 HEATH MAT-GRASS
79 PANICUM.....	5 PANICK-GRASS
12 PHALARIS.....	3 CANARY-GRASS
4 PHLEUM.....	3 CAT'S-TAIL-GRASS
71 POA.....	18 POA
17 ROTTEBOELLIA.....	1 SEA RUSH-GRASS
19 TRITICUM.....	4 QUITCH-GRASS

ORDER 3.

UMBELLIFEROUS CHICK-WEED. This is TRIGYNIA.
an annual plant, found wild in Norfolk and Suffolk,
and blossoms in April and May. It was first noticed Three Pis-
in England in 1765, when it was found on the walls tilla.
of Norwich.

British Plants of this Order.

Botanical Generic Names.	Common Names.
5 HOLOSTEUM	1 UMBELLIFEROUS CHICK-WEED
1 MONTIA	1 SMALL WATER CHICK-WEED
1 POLYCARPON	1 ALLSEED

CLASS III

ORDER 1

PAPYRUS



CYPĒRUS PAPŪRUS



ROOT OF THE PAPHYRUS

CLASS III

ORDER 2

CATS-TAIL-GRASS



PHLEUM PRATENSE





Meadow Fat-tail-grass

ALOPECURUS PRATENSIS



FESTŪCA VIVIPĂRA



Common Sugar-cane

SACCHĀRUM OFFICINĀRUM

CLASS III

ORDER 3

UMBELLIFEROUS CHICKWEED



HOLOSTĚUM UMBELLĀTUM

TETRANDRIA.

CLASS IV.

FOUR STAMINA.

This Class has three Orders.

ORDER I.

DEVIL'S-BIT SCABIOUS abounds in grassy pastures that are somewhat moist, and blossoms from August to October inclusively. This plant has an abrupt root, as if it were cut or bitten off; and from the notion that formerly prevailed as to the cause of this peculiarity, it was supposed to have great efficacy in medicine. Gerarde,^p in his Herbal, has given this whimsical account concerning it: "It is commonly called Morsus Diaboli, or Devil's bit, of the root (as is seemeth) that is bitten off: for the superstitious people hold opinion, that the Devil, for the envy that

MONOGY-
NIA.

One Pistil-
lum.

^p John Gerarde was born at Nantwich, in Cheshire, in 1545, and was educated as a surgeon. He lived in London, and in Holborn he had a considerable Physic Garden, probably the best at that time in England, for the number and variety of its productions. In 1597, he published a General History of Plants, in folio, now known by the name of Gerarde's Herbal. He died about the year 1607.

he beareth to mankind, bit it off, because it would be otherwise good for many uses."

British Plants of this Order.

Botanical Generic Names.	Common Names.
4 ALCHEMILLA.....	2 LADIES MANTLE
11 ASPERULA.....	2 WOODROOF
1 CENTUNCULUS.....	1 CHAFF-WEED
12 CORNUS.....	2 DOGBERRY TREE
4 DIPSACUS.....	3 TEASEL
1 EXACUM.....	1 MARCH CENTORY
48 GALIUM.....	14 GOOSEGRASS
38 PLANTAGO.....	5 PLANTAIN
7 RUBIA.....	1 DYERS MADDER
3 SANGUISORBA.....	1 WILD BURNET
43 SCABIOSA.....	3 DEVIL'S-BIT SCABIOUS
3 SHERARDIA.....	1 LITTLE FIELD-MADDER

ORDER 2.

DIGYNIA.

Two Pistilla.

SLENDER BUFFONIA blossoms in May and June: it was first noticed in England by Ray.⁹ It

⁹ John Ray was the son of a blacksmith, born at Black Notley, near Braintree, in Essex, November 28, 1628, and educated at Cambridge. He early applied himself to the study of Natural History. In 1682, he suggested an idea, or plan of arrangement of Vegetables superior to any then known; and in 1686, he published a General History of Plants, in which

was named by Sovage in honour of the Count de Buffon; and Linnæus added the epithet *tenuifolia*, appropriate to the plant, and at the same time expressive of the slender pretensions of the French naturalist to that honour. Unfortunately these two great men entertained but little respect for each other. In France the name of Tournefort^r held the first place

he exemplified his system in the description of 18,655 species, including varieties. His method was founded upon the general habit or structure of Plants; their size and duration, as herbs and trees; their greater or less degree of perfection; the place of growth; the number of seed-leaves, petals, capsulæ, and seeds; the situation and disposition of the flowers; the absence or presence of the Calyx and petals; and the substance of the leaves and fruit. From a combination of these circumstances, he arranged all vegetables in 33 Classes, which he subdivided into 125 sections. His method is extremely elaborate, has more natural Classes than any artificial system, but it is extremely difficult, when applied to practice, and, therefore, is now more studied for curiosity than use. He died January 17, 1704-5.

RAY was an ornament to learning and every branch of natural knowledge, and had the singular happiness to devote fifty years of his life to the cultivation of the sciences he loved. Incited by the most ardent genius which overcame innumerable difficulties and discouragements, his labours were in the end crowned with success. He reformed the studies of Botany and Zoology, he raised them to the dignity of a science, and his own investigations added more real improvement to them in England, than any of his predecessors.

^r Pitton de Tournefort was born at Aix. In 1678 he explored the mountains of Dauphiny and Savoy, and the year following went to Montpellier, where he studied medicine, after

in the department of Botanical knowledge. Buffon himself was no botanist, but, as a zoologist, so extolled by his countrymen, that a statue was erected to him in his own lifetime, on whose pedestal was an inscription, that declared **HIS GENIUS EQUAL TO THE MAJESTY OF NATURE.**^s

Linnæus named many genera of plants to commemorate persons who had added to the stock of botanical knowledge; and a strong feeling of his natural character is very discernible in this exercise of his judgment. One genus he named after a scholar of his, whose name was Browal, of obscure birth and humble fortune, and called it *Browallia depressa*. Afterwards this same man, by a favourable change of

which he travelled over the Pyrenees, and endured great difficulties and danger in searching for plants. He afterwards travelled into England, Spain, Holland, and other countries, cultivating his favourite science, and forming connections with learned men. In 1683 he was made Professor of Botany in the royal garden. In 1692 he became a member of the Academy of Sciences, and in 1700 he was sent into Asia by the king to collect plants. He died in 1708. His works are, 1. Elements of Botany, 3 vols. 8vo.; 2. Voyage to the Levant, 2 vols. 4to; 3. History of the Plants round Paris, 2 vols. 12mo.; 4. Treatise on the Materia Medica, 2 vols. 12mo.

^s Count de Buffon was born in Burgundy, September 7, 1707, and died April 16, 1788. He is said to have been very fond of flattery, and with singular *naïvete* would praise himself, by observing, that the works of eminent geniuses were few; "They are those of Newton. Bacon, Leibnitz, Montesquieu, and *my own*."

circumstances, became a bishop, and in this rank he forgot his former condition, and his former friends; Linnæus then named another species of the same genus *Browallia elata*. A plant, which has its leaves in pairs, he named *Bauhinia*, in honour of two brothers, John and Gaspard Bauhins.^t The name of *Banisteria* he gave to a climbing plant, in remembrance of M. Banister, who lost his life by falling from a rock, which he was climbing, in botanical pursuits.

British Plants of this Order.

Botanical Generic Names.	Common Names-
1 APHANES.....	1 PARSLEY-PIERT
1 BUFFONIA.....	1 BUFFONIA
4 CUSCUTA.....	2 DODDER
ULMUS CAMPESTRIS.....	COMMON ENGLISH ELM ^u

ORDER 3.

COMMON HOLLY is a tree of slow growth, and long duration; the wood is close-grained, and

TETRAGY-
NIA.

Four Pistilla.

^t John and Gaspard Bauhins wrote a General History of Plants, in 3 vols. folio, published in 1650, in which are described 5266 plants.

^u This Elm is not known to produce any perfect seed, and has been usually propagated by grafts or suckers; but now, it

the bark smooth, and abounds in a mucilage of which bird-lime is made. It blossoms in May, the berries ripen in the Autumn, and last throughout the winter.

Branches of this tree were sent by the ancient Romans to their friends with their New-year's gifts, as emblematical of good wishes; and the custom is said to be nearly as ancient as the building of Rome itself. In England the houses and churches are decorated with it at Christmas to impart an air of cheerfulness to the festive season.

In the economy of vegetation some trees preserve their leaves constantly through the whole year, and are not in the least influenced by the clemency or inclemency of the seasons; such trees are called ever-greens, of which the Holly is one. The Fir, Juniper, Yew, Cedar, Cypress, and many others are of the same description. These preserve their old leaves a long time after the formation of the new, and do not drop them at any determinate time. The leaves of ever-greens in general are harder and less succulent than those which are renewed annually.

With respect to deciduous trees, the falling off of the leaves seems much to depend on the temperature of the atmosphere, which likewise serves to

is cultivated by grafting it on the *Ulmus montana*, commonly called the Wych Hasel, or Broad-leaved Elm.

hasten or retard this operation of nature. A burning sun contributes to hasten the dropping of the leaves. Hence in hot and dry summers the leaves of the Lime-tree and Horse-chesnut turn yellow about the first of September, whilst in other years the yellowness does not appear till the beginning of October. Nothing, however, contributes more to hasten the fall of the leaves than immoderate cold or moist weather in autumn; moderate droughts, on the other hand, serve to retard it. As a proof of this position, M. Adamson relates, that in the year 1759, the leaves of the Elm-tree, which generally fall off about the twenty-fifth of November, continued in verdure and vigour at Paris, where the autumn was remarkably dry, till the tenth of December.—In Worcestershire it is the general opinion that this tree should be without branches; and a Baronet of very considerable landed property in that county, has improved upon this prevalent taste by terminating his pruning with cutting off the top, and nailing a flat board on the headless tree.

The following table respecting the mean times in which different trees shed their leaves, is founded upon observations.

Gooseberry-tree, and Bladder-	generally shed their leaves about	October 1.
Sena,		 15.
Walnut and Ash		
Almond-tree, Horse-chesnut,		 20.
and Lime-tree,		
Maple, Hazle-nut, Black-		 25.
poplar, and Aspen-tree,		
Birch, Plane-tree, Mountain-		
osier, False-acacia, Pear,		
and Apple-tree,		November 1.
Vine, Mulberry, Fig, Sumac,		 10.
and Angelica-tree,		 15.
Elm-tree, and Willow,		 20.
Apricot, and Elder-trees,		

British Plants of this Order.

Botanical Generic Names.

Common Names.

16 ILEX.....	1 HOLLY
14 POTAMOGETON.....	11 CURLED PONDWEED
1 RUPPIA.....	1 TASSELGRASS
5 SAGINA.....	4 PEARLWORT
8 TILLÆA.....	1 REDSHANKS

CLASS IV

ORDER 1

DEVILS-BIT SCABIOUS



SCABIŌSA SUCCĪSA

CLASS IV

ORDER 2

SLENDER BUFFONIA



BUFFONIA TENUIFOLIA

CLASS IV

ORDER 3

COMMON HOLLY



Bacca
which contains 4 Seeds.



Germen.



4 Stamens.



Corolla or 4 Petals.



Calyx.



The Flower complete.

ILEX AQUIFOLIUM

PENTANDRIA.

CLASS V.

FIVE STAMINA.

This Class has seven Orders.

ORDER I.

LOTUS. This is a very branching thorny shrub ; it is a native of Africa, where it abounds from the eastern to the western extremity, and by the natives held in high estimation ; it is also found wild in many parts of Asia. It blossoms early in the spring, and the fruit ripens in autumn.

MONOGY-
NIA.

One Pistil-
lum.

Among the ancients, there seems to have been several different plants of this name, both arborous and herbaceous ; but of this, there can be little doubt that it is the Lotus of the Lotophagi of Homer, the same as is thus described by Herodotus, Polybius, and Pliny.

HERODOTUS. “ Lotophagi inhabit the coast of these Gindenes (an African people) which stretches to the sea ; who live by eating the fruit only of the Lotus. This fruit of the Lotus is in size about as

large as that of the *lentiscus*;^x in sweetness, it is like the fruit of the Palm-tree. From this fruit the Loto-phagi also make wine."^y

POLYBIUS. "The Lotus is a tree of no great height, rough and thorny, and bears a green leaf, somewhat thicker and broader than that of the bramble; its fruit at first is like the ripe berries of the myrtle, both in size and colour, but when it ripens it turns to purple; it is then about the bigness of an olive; it is round, and contains a very small kernel; when it is ripe it is gathered, and bruised among bread-corn, put up into a vessel, and kept as food for the servants; it is dressed after the same manner for the family, the kernel being first taken out: it has the taste of a fig, or date, but a far better scent. Wine is likewise made of it by steeping and bruising it in water, and has a very relishing taste, like wine tempered with honey. It is drunk without being mixed with water, but will not keep more than ten days, therefore it is made in small quantities for immediate use. Vinegar is also made of it."^z

PLINY. "That part of the coast of Africa which borders on the Mediterranean, produces that celebrated tree the Lotus, which the natives call *Celtis*; and the same tree is also common with us in Italy, but not indigenous. The chief quantity grow about *Syrtes*

^x σχίνα.

^y Herodotus, Lib. 4. (Melpomene) 'Ακτὴν δὲ περιέχουσαν.—

^z This is an extract preserved by Athenæus, from the 12th book of Polybius, which is lost. 'Ιστορεῖ περὶ τῆ ἐν Λιβύῃ.—

and the *Nasamones*, of the size of the pear-tree, though Cornelius Nepos speaks of it as a shrub. The leaf is more serrated, otherwise it might be taken for the leaf of the evergreen oak. Of this Lotus there are many varieties, and those differences, most conspicuous in the fruit. This fruit is of the size of a bean, and of a saffron colour, but before it is ripe it undergoes many changes of hue, like the grape. The fruit is produced in clusters, among branches, like Myrtle-berries, and not as cherries are with us in Italy. The fruit affords so sweet a food, that it has given name to a people and a district.—The better sort is without stone, for there is one kind which has a bony nut. From the fruit, wine is also expressed, like *mulso*; ^a which the before-mentioned Nepos says will not keep more than ten days: they take the berries and pound them with wheat corn, and make food, which is laid up in tubs: moreover, we have even heard of an army marching to and fro through Africa, having been fed with it. The wood is of a black colour, and in request to make pipes to play upon. Of the root is made the hafts of knives, and other things of less account. This is the nature of the tree in that country.”^b

Among modern travellers Dr. Shaw says, that the fruit is now common in the Deserts, and other parts of Barbary; is still in great repute, and sold in the

^a Mulso is usually translated Mede: it was a new wine mixed with honey, and often used in libations.

^b Pliny, Lib. xiii. C. 17. De arbore Loto.

market all over the southern districts of those kingdoms.

Mungo Park, in his travels in the interior of Africa, observed two negroes sitting among some thorny bushes, who had been gathering *tomberongs*, of which he gives this account:—"These are small farinaceous berries, of a yellow colour and delicious taste, which were no other than the fruit of the *Rhamnus Lotus* of Linnæus. They had gathered two large baskets-full in the course of the day. These berries are much esteemed by the natives, who convert them into a sort of bread, by exposing them for some days to the sun, and afterwards pounding them gently in a wooden mortar, until the farinaceous part of the berry is separated from the stone. This meal is then mixed with a little water, and formed into cakes, which, when dried in the sun, resemble in colour and flavour the sweetest gingerbread. The stones are afterwards put into a vessel of water, and shaken about, so as to separate the meal which may still adhere to them; this communicates a sweet and agreeable taste to the water, and with the addition of a little pounded millet makes a pleasant gruel called *fondi*, which is the common breakfast in many parts of Ludamar, during the months of February and March. The fruit is collected by spreading a cloth upon the ground, and beating the branches with a stick.

"The *Lotus* is very common in all the kingdoms

which I visited, but is found in greatest plenty on the sandy soil of Kaarta, Ludamar, and the northern parts of Bambarra, where it is one of the most common shrubs of the country.

“As this shrub is found in Tunis, and also in the Negro kingdoms, and as it furnishes the natives of the latter with a food resembling bread, and also with a sweet liquor which is much relished by them, there can be little doubt of its being the Lotus mentioned by Pliny as the food of the Libyan Lotophagi.”

Among the adventures of Ulysses on his return to his native country, after the siege of Troy, by adverse winds and unmanageable currents, he arrived at an island inhabited by a people called Lotophagi, where he landed to take in water and refresh his crews; after they were refreshed, he sent three men into the country to learn some particulars concerning the natives, and they found them a friendly people, who offered them to taste of the Lotus, of which he who had once tasted, Homer says, had no desire to return, but rather wished to live with them, and renounce all thoughts of home. It would seem, however, that they returned to Ulysses, most probably drunk, for they were refractory, and he was obliged to use force to get them on board: he then confined them, bound, underneath the benches on which the rowers sat, and fearing lest any more of his men should be induced to try the fascinating effects of the Lotus, he immediately ordered them all on board and departed.

Pope has thus translated this account.

Three men were sent, deputed from the crew,
 (An Herald one) the dubious coast to view,
 And learn what habitants possess the place?
 They went and found an hospitable race:
 Not prone to ill, nor strange to foreign guest,
 They eat, they drink, and nature gives the feast;
 The trees around them all their food produce,
Lotus the name, divine, nectareous juice!
 (Thence call'd *Lotophagi*) which whoso tastes,
 Insatiate riots in the sweet repasts,
 Nor other home, nor other care intends,
 But quits his house, his country, and his friends:
 The three we sent from off th' enchanting ground
 We dragg'd reluctant, and by force we bound:
 The rest in haste forsook the pleasing shore,
 Or, the charm tasted, had return'd no more.^c

PONTIC AZALIA, *Azalia pontica*. This is a shrub growing from four to fourteen feet high, irregularly branched, with a slender stem covered with a smooth brown bark. The flowers appear before the leaves are fully expanded; of a fine yellow colour, and an agreeable fragrance. It was first introduced into England by Messieurs Lee and Kennedy, from some seeds sent to them in a letter from the shores of the Black Sea by Professor Pallas. He relates, that the honey of bees frequenting the flowers of this plant is supposed to be narcotic, and that goats, kine, and sheep have been poisoned by eating its leaves.

^c Odyssey, Book IX.

He found it on the river Dnieper in swampy ground, and by the natives called the stupifying shrub, and by them considered to have an intoxicating quality, and in many cases to be efficacious as a medicine. Near Oczakow he found thousands of these plants fully blown in a marsh, every spring-tide overflowed by the sea, and saw a Tartarian farmer, who lived entirely by the profits from the honey which the bees extracted from their flowers sold in Constantinople and other parts of Turkey for medical purposes. This honey is mentioned by many ancient authors, and in particular by Xenophon, Strabo, and Pliny. By Xenophon its effects are recorded in his famous retreat of the ten thousand Greeks when they arrived in the neighbourhood of Trapezus.^d

“ In general there was nothing that excited their wonder: but there were in the place a number of bee-hives, from which all the soldiers, who tasted the honeycombs, lost their senses, and were seized with vomiting, and not one of them was able to stand upright. Those who had eaten a little, became like persons very drunk; those who had taken much, like madmen; and some even like dying persons. In this manner numbers lay about, as though after a defeat; and there arose a general despondency. On the morrow, however, no one died; but about the same hour at which they had been seized they recovered their senses; and on the third and fourth day

^d Trebisonde.

they rose up again as though recovering from the effects of medicine.”^e The account of the effect of this honey by Diodorus Siculus corresponds exactly with this, and was probably compiled from it.

Strabo speaks thus concerning it. “These Hep-tacometæ ^f cut to pieces three cohorts of Pompey which had forced their way through the mountains, by mixing for them in the ways, goblets of the *mad-den*ing^g honey, which the higher branches of the trees here produce. For by falling upon the men when they had drank it, and in consequence lost their senses, they easily put them to the sword.”^h

Pliny in his Natural History also speaks of this Honey.—“The food (of the bees) is a matter of so much consequence that the honey may even be poisoned by it. At Heraclea in Pontus the honey, made by the same bees, is in some years of a most destructive quality. As no authors have told us from what flowers it is made, we will report the result of our own discoveries.

“There is a plant, which, from its power of destroying cattle, in general, but more particularly goats, is called *Ægolethron*.ⁱ The flowers of this plant,

^e Xenophon Cyri Expedit. Lib. iv. c. 8. Καὶ τὰ μὲν ἄλλα
ἐδὲν ἦν —

^f Inhabitants of the seven villages.

^g Τῶν, μαινομένων μελιτος, are the words of Strabo.

^h Strabo Lib. xii. (Art. Pontus) Οἱ δὲ ἑπτὰ κομῆται, —

ⁱ Αἰγῶν ὀλεσθρός, the destruction of goats.

when they wither in a wet spring, acquire a noxious poison; whence it happens that this evil is not equally felt in all years indiscriminately.

“The signs of the honey being poisonous, are, its not thickening properly, its colour being redder, its scent disagreeable, and producing sneezing, and its being heavier than when harmless. They who have eaten it cast themselves on the ground with the hope of cooling themselves; for the effect of this honey is, that they are melted with perspiration.

“There is in the same part of Pontus another kind of honey, which, from the madness it produces, they call *menomenon*. It is supposed to be collected from the flower of the *Rhododendros*, with which the woods abound. Hence this people (the Sanni or Maerones) whilst they furnish wax to the Romans, in part of tribute, do not supply them with any honey, because it is of a deadly quality.”^k

The figure here represented is the *Chamærhododendros Pontica* of Tournefort; and, on the most accurate investigation, is supposed to be the same plant which produced that peculiarity in the honey which caused the effects described by these authors.

TOBACCO. *Nicotiana tabacum*. This is an annual plant, a native of America, of which botanists make seven species. The stalk is erect and strong, branched towards the top, and rises to five or six feet in height,

^k Pliny, Hist. Nat. Lib. xxi. c. 13.

and blossoms in July and August.¹ It appears to have been first introduced into Europe as a medical herb, about the year 1560, of which this account is given by Dr. Monardus of Seville, an eminent Spanish physician of that time.

M. John Nicot, ^m the French ambassador to the king of Portugal, going one day to see the Royal Prisons, the Governor presented him with this herb as a foreign plant brought from Florida. M. Nicot planted it in his garden at Lisbon, where it grew well; after which he was told by one of his Pages, that a great cure had been performed on a young man who had a dangerous excoriating disease on his cheek, by an external application of its bruised leaves. This case was examined into, and believed to be true, which gave the plant such celebrity that it was called the *ambassador's herb*; and afterwards so many cures were said to be effected by it, that M. Nicot sent it into France, to Francis II. From this circumstance it has its botanical name *Nicotiana*, to honour M. Nicot. Among the Indians it was called *Picielt*, and its European name, *Tabacco*, was given to it from the Isand called *Tabaco*, now Tobago.

The introduction of smoking this herb in England is given to Sir Walter Raleigh after his discovery of Virginia, about the year 1586; though before the

¹ For a good description of the manner of cultivating tobacco, see Long's History of Jamaica, Vol. iii. p. 719.

^m M. Nicot was ambassador in Portugal from the year 1559 to 1561.

year 1570 the plant was cultivated in England, as appears from Lobel; and before the year 1574, when Dr. Monardus published his book, he had seen the effects of smoking in Spain upon some African slaves, who had learned the practice from the natives of the West Indies: of which he gives this account,—

“The Indians of our Occidental Indies use the tobacco to take away weariness, and to make light-someness in their labour, for in their dances they are so much wearied, and remain so tired, that they can scarcely stir; and that they may labour the next day and return to their foolish exercises, they receive, at the mouth and nose, the smoke of the Tobacco, and remain as if they were dead; and being so, they are refreshed in such sort, that when they are awakened out of their sleep, they remain without weariness, and are able to return to their labour as before; and so they do always when they have need of it: for with that sleep they receive their strength and be much the lustier.

“The black people who have gone from these parts to the Indies have practised the same custom, and use the tobacco as the Indians do; for, when they feel themselves weary they take it at the nose and mouth, and it happeneth to them as unto our Indians; lying as though they were dread three or four hours; and after, they remain lightened without weariness, to labour again; and they do this with great pleasure: and although they be not weary yet they are very desirous to practise it, and the habit is

become so prevalent, that their masters correct them for it, and burn the tobacco that they may not use it; whereupon they go to the deserts and secret places to indulge in these habits. As they are not permitted to drink till they are drunk with wine, they are glad to make themselves drunk with the smoke of tobacco. I have seen them do it here, and it happened to them as is said. They say when they recover from the trance or dream occasioned by the fumes they find themselves very lusty, and rejoice to have been after the same sort and manner, seeing that thereby they do receive no hurt.”^o

It is remarkable that this custom of smoking, and its effects among the natives of the West Indies, should be found to correspond to similar habits in remote antiquity, thus recorded by Herodotus, when speaking of the inhabitants of certain islands formed by the Araxes.

“ The river Araxes is differently spoken of, as being greater, and likewise less than the Ister; writers however say generally that there are numerous islands in it, about equal in size to Lesbos, and that in these islands live men who subsist during the summer on all kinds of roots, which they dig up, but who lay up in store the fruits of the trees, when ripe, and subsist on them during the winter season. By these men other trees have been discovered, bearing fruit of a peculiar nature, which, when they assemble on the same spot in companies, after kindling a fire, and seating them-

^o This extract is made from an old translation of Monardus, not having the original work at hand.

selves round it, they cast into the fire; then snuffing up the scent of the fruit thrown in, whilst burning, they become drunk with the odour of it as the Greeks do with wine. In proportion as more fruit is thrown in, they become more intoxicated; until they rise up to dancing, and from that to singing. Such is reported to be their manner of living.”

King James I. is well known to have had a particular dislike to the fumes of tobacco, and employed his pen as well as his regal authority to suppress the use of it. His pamphlet entitled *A counterblast to Tobacco*, commences by stating the odious purposes to which tobacco is applied as a medical herb, and he concludes the paragraph with this eloquent apostrophe to those who take it for an amusement:—“ And now, good countrymen, let us (I pray you) consider what honour or policy can move us to imitate the barbarous and beastly manners of the wild, godless, and slavish *Indians*, especially in so vile and stinking a custom—these, who are the refuse of the world, and as yet aliens from the holy covenant of God. Why do we not as well imitate them in walking naked as they do? in preferring glasses, feathers, and such toys, to gold and precious stones, as they do? Yea, why do we not deny God, and adore the devil, as they do?” Notwithstanding this royal declamation, which consists of nine folio pages, and a tax imposed of six shil-

P Herodotus, Lib. i. (Clio) ‘Ο δὲ Ἀράξης λεγεται—

lings and tenpence a pound on the importation of it,³ yet the sovereignty of habit and subsequent policy, con-

9 Rymer has preserved a warrant dated the 17th of October, 1604, to impose an additional duty of 6s. and 8d. per pound, the preamble of which will serve to shew the grievances of which the King thought he had good reason to complain.

“Wheras *tobacco*, being a drug of late years found out, and by merchants, as well denizens as strangers, brought from foreign parts in small quantity into this realm of England, and other our dominions, was used and taken by the better sort both then and now only as physic, to preserve health, and is now at this day, through evil custom and the toleration thereof, excessively taken by a number of riotous and disordered persons of mean and base condition, who, contrary to the use which persons of good calling and quality make thereof, do spend most of their time in that idle vanity, to the evil example and corrupting of others, and also do consume that wages which many of them get by their labour, and wherewith their families should be relieved, not caring at what price they buy that drug, but rather devising how to add to it other mixture, thereby to make it the more delightful to the taste, though so much the more costly to their purse, by which great and immoderate taking of *tobacco* the health of a great number of our people is impaired, and their bodies weakened and made unfit for labour, the estates of so many mean persons so decayed and consumed as they are thereby driven to unthrifty shifts, only to maintain their gluttonous exercise thereof; besides that also a great part of the treasure of our land is spent and exhausted by this only drug, so licentiously abused by the meaner sort.” All which enormous inconveniences, as they are stated, the king proposes to remedy by laying on an additional duty of six shillings and eightpence per pound, * to act as a prohibition to its importation, except for medical purposes.

* The previous duty was twopence per pound.

tinues to make it one of the most productive branches of revenue in every civilized kingdom in Europe.

COFFEE, *Coffea Arabica*. The coffee-tree seldom exceeds twelve feet in height; it is slender, the upper part sending off trailing branches; the bark is brown and almost smooth. It is a native of Arabia Felix and Ethiopia, and was first noticed by Ranwolfius in 1573, but first described in 1591 by Alpinus. It was cultivated in Britain by Bp. Compton, in 1696.

The fruit of this tree is a round fleshy red berry, containing two seeds, the appearance of which is well known. The use of Coffee appears to have originated in Ethiopia, but the practice of drinking it in Arabia was introduced from Persia, by the Mufti of Aden, in the fifteenth century. In 1554 its use first began at Constantinople, from whence it became gradually adopted in the western parts of Europe. In Paris the first coffee-house established in that city was in the year 1672. in London in 1652 the first shop was established for the sale of coffee, and eight years after, it contributed to the public revenue by a duty of fourpence upon every gallon made and sold.

M. La Roque, in his *Voyage de l'Arabie heureuse*, has given this account of the culture and management of the coffee, as practised in Arabia Felix: "The coffee-tree is there raised from seed, which is sown in nurseries, and the young trees planted out as there is occasion for them. The Arabians choose for their plantations a moist and shady situation on a small eminence, or at the foot of the mountains, and take

great care to conduct from the mountains little rills of water, in small channels, to the roots of the trees : it being absolutely necessary that they should be constantly watered, in order to produce and ripen the fruit. When they observe that there is a good deal of fruit upon the tree, and that it is nearly ripe, the water is turned off from the roots, to lessen that succulency in the fruit which too much moisture would occasion. In places much exposed to the south, the coffee-trees are planted in regular lines, sheltered by a kind of poplar tree, which extends its branches on every side to a great distance, affording a necessary shade when the heat of the sun is too intense. When the fruit is advanced to maturity cloths are spread under the trees, the trees are then shaken, and the ripe fruit readily drops off. The berries are afterwards spread upon mats and exposed to the sun until they are perfectly dry ; after which the husk is broken with large heavy rollers, made either of wood or stone. When the coffee is thus cleared of its husk it is again dried in the sun, and lastly winnowed."†

Both the outer pulpy part of the berry, and the inner membrane immediately investing the seed, are prepared for use by the Arabians ; the former is much esteemed, and constitutes the coffee *à la Sultane* ; the latter is chiefly employed by the common people, and sold under the name of *Kischer*. The seeds used by us, and which by the Arabians are thought to be too heating, are principally imported into Europe

† This account is adopted from Mr. Ellis's translation.

from Yemen, where the coffee is most abundantly cultivated.

Coffee has been cultivated in Batavia and Surinam by the Dutch, in Cayenne and Martinico by the French, and in Jamaica by the English: of these, from mismanagement or some cause not understood, our colonial coffee is said to be the worst. The Mocha coffee is superior to all others.

Whether coffee be more or less prejudicial to the human constitution than tea has not yet been ascertained, and its particular effects must still be left to the experience of individuals. These two qualities, however, appear to be common to all constitutions; that when the stomach is oppressed with animal food strong coffee affords considerable relief, and consequently is supposed to promote digestion, and also, that it suspends the inclination to sleep

WOODY NIGHTSHADE. *Solanum dulcamara*. This plant is common in hedges, particularly if well supplied with water, and the flowers appear about the latter end of June.

The roots and stalks of this Nightshade, on being chewed, first cause a sensation of bitterness, which is soon followed by a considerable degree of sweetness; and hence the plant has obtained the name of Bittersweet and the specific distinction, *dulcamara*. It produces red pendulous berries, which though not of so poisonous a quality as those of the *Deadly Nightshade*, yet there is no doubt of their possessing deleterious effects; and as they may be mistaken by children for

red currants, they should be prevented from eating them.

DEADLY NIGHTSHADE, *Atropa bella-donna*. This plant grows in shady and stony waste grounds, but is no where very common. The flowers, which are bell-shaped, are of a dark or brownish purple, and make their appearance in June or July. The berries are ripe in September, when they are of a shining black colour.

Both the leaves and berries of this plant are a strong narcotic poison, and there are many instances of their fatal effects, particularly on children, who are readily tempted to eat the fruit, from its alluring appearance and sweet taste. Sauvages, a learned French physician, supposes this to be the plant which produced such dreadful effects upon the Roman soldiers, during their retreat from the Parthians, under the command of Anthony.

Among the Scots, according to their historian Buchanan, the poisonous effects of this plant were known at a very early time; and the instance he records of its use does more honour to his candour than it reflects credit on his country. The root also partakes of the same quality as the leaves, but less virulent; and Shakespeare, in his *Macbeth*, makes Banquo say,

‘ Or have we eaten of the insane root,
That takes the reason prisoner?’

I have introduced this plant with the Woody Night-

shade, to illustrate the importance of scientific botanical names. The *Atropa*, *Circæa*, and *Solanum*, in English, are all called Nightshades, but which obviously have very different characters, and are distinct genera. In like manner we have a common Nettle and a dead Nettle, ground Ivy and common Ivy, different kinds of Thistles and Docks; which are not at all allied in nature, and have only obtained their names from vague resemblance or fanciful associations. *Urtica* and *Lamium*, *Glicoma* and *Hedera*, *Rumex* and *Arctium*, *Carduus* and *Sonchus*, &c. at once fix the mind, by giving precise and distinct ideas: hence the importance of technical language, so often unjustly depreciated. A familiar idiom is too frequently misty and confused; without clearness there is always danger that the truth is misunderstood; and the value of TRUTH, in all its possible bearings, in every pursuit and investigation, cannot be too scrupulously attended to; for every thing depends upon it, as well in the physical as in the moral world.

British Plants of this Order.

Botanical Generic Names.	Common Names.
7 ANAGALLIS	2 PIMPERNEL
10 ANCHUSA	1 ALKANET
1 ASPERUGO	1 CATCHWEED
8 ATROPA	1 DWALE
7 AZALIA.....	1 ROSE-BAY
5 BORAGO.....	1 BORAGE

Botanical Generic Names.	Common Names.
78 CAMPANULA	8 BELL-FLOWER
10 CHIRONA.....	2 CENTORY
110 CONVULVULUS.....	3 BINDWEED
5 CYCLAMEN.....	1 CYCLAMEN
12 CYNOGLOSSUM.....	2 HOUNDSTONGUE
8 DATURA.....	1 THORN-APPLE
21 ECHIU.....	3 VIPERGRASS
8 EUONYMUS	1 SPINDLE-TREE
1 GLAUX	1 SALTWORT
6 HEDERA.....	1 IVY
4 HOTTONIA.....	1 FEATHERFOIL
8 HYOSCYAMUS	2 HENBANE
12 IMPATIENS.....	1 TOUCH-ME-NOT
21 ILLECEBRUM.....	1 KNOTGRASS
1 JASIONE.....	1 SCABIOUS SHEEPSBIT
12 LITHOSPERMUM.....	3 GROMWELL
42 LOBELIA.....	2 WATER GLADIOLE
19 LONICERA.....	2 HONEYSUCKLE
8 LYCOPSIS	1 BUGLOS
5 LYSIMACHIA.....	4 LOOSESTRIFE
5 MENYANTHES.....	2 BUCKBEAN
7 MYOSOTIS	2 SCORPION GRASS
16 PHYTEUMA.....	1 RAMPION
5 POLEMONIUM	1 JACOES-LADDER
20 PRIMULA.....	4 PRIMROSE
7 PULMONARIA.....	3 LUNGWORT
42 RAMNUS	2 BUCKTHORN
17 RIBES	6 CURRANT
2 SAMOLUS.....	1 BROOKWEED
93 SOLANUM.....	2 NIGHTSHADE
3 SYMPHYTUM	2 COMFREY
19 THESIU.....	1 FLAXWEED
19 VERBASCUM.....	6 MULLEIN
43 VIOLA	7 VIOLET
5 VINCA.....	2 PERIWINKLE

ORDER 2.

WATER-HEMLOCK is found in ditches and on the margins of rivers, always under water, when young, in which situation horned cattle sometimes eat it, and are poisoned; but when they can discriminate this plant from other herbage they reject it. Linnæus and Stillingfleet are of opinion, that cows only eat it when under water, because they cannot smell it, and when summer advances and dries up the ground, they are very careful not to touch it. In Lapland, when Linnæus was making a botanical tour through that country, a fatal disease prevailed amongst the cattle at Tornea, the cause of which was wholly unknown to the farmers. “ When I arrived, says he, at Tornea the inhabitants complained of a terrible disease that raged among the horned cattle; which upon being let into the pastures in the spring, died by hundreds. They desired that I would consider this affair, and give my advice what was to be done in order to put a stop to this evil.” Linnæus, after considering the subject with minute attention, discovered the disease to be produced by this water-hemlock being eaten in the marshy pastures in its young state under water; he therefore recommended the farmers, to carefully eradicate these plants, which might be easily effected, as they grew in marshy grounds, and not at all difficult to find; but if that could not be done, he advised them to keep their cattle on upland

DIGYNIA.

Two Pistilla.

grounds till the season of the year was sufficiently advanced to make the pastures sound and dry, being convinced that later in the year the Hemlock would be rejected by the scent alone. The farmers took his advice and the evil was removed.^r This is an illustrious instance to demonstrate the advantage a scientific man has over plodding ignorance; and may even serve to shew the mean part of the creation, who see no value in any thing but what they can immediately convert into money, that even a little intellect in natural history may contribute to their views of human happiness.

FOOLS PARSLEY, *Æthusa senapium*. Among the advantages of Botany, that is not the least considerable which enables us to avoid using, for domestic purposes, those plants which may be poisonous or prejudicial. This plant, common in every garden, so much resembles parsley that it is easily taken for it, and cases have occurred where the most dangerous consequences have been the result of this ignorance: while common parsley, *Apium petroselinum*, is a

^r Linnæus says, the cattle that died were seized with convulsions, swelled, and in a few days expired with horrible bellowsings.

Stillingtonfleet is of opinion, that what makes low grounds noxious to sheep is not the moisture, but the plants that grow there. For it is observed by shepherds, that the great danger to sheep is immediately after a fresh spring grass, which he suspects is owing to their cropping the young and tender shoots of poisonous plants in common with their proper food.

grateful herb, Fools parsley is highly poisonous. Although these plants have a strong general resemblance, yet they are to be distinguished from each other by a very little knowledge and attention. The colour of the leaves of the common parsley are of a yellowish green, and when bruised in the hand have a strong, but not disagreeable scent; those of the fools parsley are of a very dark green, much more finely divided, and when bruised have very little scent. But one character which distinguishes this herb, not only from Parsley but from all other umbelliferous plants, is, three long narrow pendulous leaves which compose its partial involucrum, and which grow from the base of each of the small umbels; to shew this fact the figure of the plant is introduced, that it might be clearly understood.

The plants of this kind of inflorescence, which by botanists is called an umbel, are apt to be poisonous when their native situation is wet or marshy; but, on the contrary, if they grow naturally in a dry soil, they are often aromatic, as parsley, caraway, &c.

Of this Order is the *Ferula Asa foetida*, from which the Gum Asa foetida is made.

British Plants of this Order.

Botanical Generic Names.	Common Names.
1 ÆGOPODIUM	1 HERB GERARD
4 ÆTHUSA	2 FOOLS PARSLEY
3 ANETHUM	1 FENNEL
6 ANGELICA	1 ANGELICA
2 APIUM	1 COMMON PARSLEY
10 ATHAMANTA	1 STONE PARSLEY
4 BETA	1 BEET
2 BUNIUM	2 PIGNUT
19 BUPLEURUM	2 THOROUGHWAX
1 CARUM	1 CARAWAY
9 CAUCALIS	7 BASTARD PARSLEY
10 CHÆROPHYLLUM	2 CHERVIL
23 CHENOPODIUM	11 GOOSEFOOT
3 CICUTA	1 WATER HEMLOCK
5 CONIUM	1 HEMLOCK
2 CORIANDRUM	1 COMMON CORIANDER
3 CRITHMUM	1 SAMPHIRE
7 DAUCUS	2 CARROT
11 ERYNGIUM	2 ERYNGO
53 GENTIANA	5 GENTIAN
6 HERACLEUM	1 HOGWEED
4 HERNIARIA	2 RUPTUREWORT
15 HYDROCOTYLE	1 MARCH PENNYWORT
1 IMPERATORIA	1 MASTERWORT
8 LIGUSTICUM	2 SEA PARSLEY
11 CENANTHE	3 DROPWORT
3 PASTINACA	1 PARSNEP
11 PEUCEDANUM	3 MEADOW SAXIFRAGE
2 PHILLANDRIUM	1 WATER HEMLOCK
9 PIMPINELLA	3 ANISE

Botanical Generic Names.	Common Names.
3 SANICULA	1 COMMON SANICLE
11 SCANDIX	4 SHEPHERDS-NEEDLE
9 SELINUM	1 WILD MILKY PARSLEY
7 SISON	4 STONEWORT
10 SIUM	4 WATER PARSNEP
7 SMYRNIUM	1 COMMON ALEXANDERS
6 SWERTIA	1 MARCH FELWORT
7 ULMUS	2 ELM ^s

ORDER 3.

PASSION-FLOWER. Of this genus there are thirty-seven different species. This is the common blue Passion-flower, which in a few years may be trained up to more than forty feet high, and the stalks will grow to a very considerable size. It grows naturally in Brazil, but is hardy enough to thrive here in the open air, and is now become the most common species in England.

This beautiful Genus was unknown till the discovery of America, and the different species are chiefly found in South America and the Islands. It has its name from a fanciful analogy of the different parts of the flower to the Passion of Christ. The

TRIGYNIA.

Three Pistilla

^s This is the Wych Hasel or broad-leaved Elm, *Ulmus montana*. The common Elm, *Ulmus campestris*, is of the Class and Order before mentioned, Tetrandria Digynia.

Jesuits, who went as missionaries to South America, thought they discovered in the three pistilla the representation of the three nails with which our Saviour was nailed to the cross; the five stamina, the five wounds; and in the radiant purple nectary, the representation of the rays that might be supposed to have surrounded his head when he expired on the Cross.^t

British Plants in this Order.

Botanical Generic Names.	Common Names.
3 ALSINE.....	1 ALSINE
1 CORRIGIOLA.....	1 SAND-STRAIWORT
5 SAMBUCUS.....	2 ELDER
3 STAPHYLEA.....	1 WINGED BLADDER NUT-TREE
4 TAMARIX.....	1 TAMARIX
23 VIBURNUM.....	2 WAY-FARING-TREE

^t La flor de la Granada, ò Granadilla
De Indias, i misterios encerrados,
A quien no causará gran maravilla,
Figuranse los doce consagrados;
De una color verde, i amarilla,
La Corona, i los Clavos tres morados,
Tan natural están, i casi al vivo,
Que Yo me admiro agora, que lo escrivo.

ARGENTO, o, *Rio de la Plata, Canto III. p. 9.*

This extract is from an historical poem in 28 cantos, written by Don Martin de la Barco, who went out to America in the expedition with Zarate, 1572.

ORDER 4.

GRASS OF PARNASSUS. Of this plant there is only this one species; and it is the only English plant of this Order. It is a native of most parts of Europe, by the side of bogs and moors, and in wet meadows. It produces milk-white flowers in August and September. The petals are veined with pellucid lines; but that part of the flower which is called the nectary, of which there are five, set round with numerous yellow glands, supported on foot-stalks, is more curiously constructed than is to be found in any other British flower.

TETRAGY-
NIA.

Four Pistilla.

ORDER 5.

FLAX blossoms in June and July; whether it be a native of England or not is doubtful.

PENTAGY-
NIA.

Five Pistilla.

Flax appears to have been cultivated as early as we have any historical knowledge; it is mentioned in the Old Testament as cultivated in Egypt.^u It is a tall, slender, annual plant, with a beautiful blue flower. When it is ripe it is pulled up by the roots by hand, and laid in water to soak till it begins to rot; it is then taken out, spread in the air to dry, and is fit for the

^u Exodus, ch. ix. v. 31.

operation of breaking, &c.; after which it is spun, and by the loom made into cloth from the coarsest sheeting to the finest cambric.^x From this plant thread is made so fine as to be nearly worth its weight in gold, to be afterwards manufactured into lace. Thus by industry and ingenuity a simple vegetable is converted to one of the most ornamental and expensive luxuries of dress.

Flax not only supplies us with that cloth called *linen*, a word derived from *Linum*, the classical name of the plant, but the seeds furnish an oil, called linseed oil, of great importance in painting and varnishing; and after the oil is expressed from them, the refuse, called oil-cake, is applied to the fattening of cattle, a food profitable to the farmer, but injurious to the quality of the meat.

Botanical Plants of this Order.

Botanical Generic Names.	Common Names.
9 DROSER A	3 SUNDEW
25 LINUM	5 FLAX
3 SIEBALDIA	1 PROCUMBENT SILVERWEED
39 STATICE	3 THRIFT

^x In the simplicity of former times, when families in this island provided within themselves most of the necessities and conveniences of life, every garden supplied a proper quantity of hemp and flax for domestic use. The necessary preparation of steeping it in water, previous to dressing it, was so offensive and detrimental, that in the reign of Henry VIII. a law was

ORDER 6.

GREAT SUN-DEW. Of this genus Professor Martyn enumerates nine species, three of which are of English growth. These plants are of a small size and singular structure. The leaves of most of the species, next the root, are furnished with glandulous hairs on the upper surface, and fringed round the edge; these hairs have each a small globule of pellucid liquor like dew, continuing even in the hottest part of the day, and in the fullest exposure to the sun; hence the English name *Sun-dew*. This species is found wild in Norfolk, and is common in some other counties. This is the only English Genus of this Order.

HEXAGY-
NIA.

Six Pistilla.

ORDER 7.

MOUSE-TAIL is a native of gravelly corn-fields, not unfrequent about London. The flowers are extremely small, and are succeeded by long slender spikes of seeds resembling the tail of a mouse, whence

POLYGY-
NIA.

Many Pistilla.

made to prevent any person from watering Hemp or Flax in any stream, river, or common pond, where beasts were accustomed to drink, on pain of forfeiting, for every time, twenty shillings; and this law is still in force, yet it is often infringed, as flax steeped in running water is always of a whiter colour and much softer, and is said to be stronger and more durable than that which has been steeped in pits, or pools, of stagnant water.

it has its name. The plant varies extremely in size, according to the luxuriance of the soil. It blossoms early in the summer, after which, it soon ripens and sheds its seeds, and then withers. This is the only English Genus of this Order of which there is only this one species.

Dr. Smith observes, that this plant is a remarkable instance of few stamina, (though they often exceed five) to a multitude of pistilla.

CLASS V

ORDER 1

LOTUS



RHĀMNUS LŌTUS



Pentstemon azalea

AZALEA PONTICA
V
7





Tabaco

NICOTIĀNA TABĀCUM

$\frac{v}{7}$



Eastern Coffee-tree

COFFĒA ARABĪCA
V
7



Woody Nightshade

SOLĀNUM DULCAMĀRA
V
7



Druck v. T. G. Schöner

ATRŌPA BELLADONNA

$\frac{v}{7}$

CLASS V

ORDER 2

WATER HEMLOCK



CICŪTA VIRŌSA



Fools Parsley

ÆTHŪSA CYNAPIUM
 $\frac{v}{2}$

CLASS V

ORDER 3

BLUE PASSION FLOWER



PASSIFLORA CAERULEA

CLASS V

ORDER 4

GRASS OF PARNASSUS



PARNASSIA PALŪSTRIS

CLASS V

ORDER 5

FLAX



LINUM USITATISSIMUM

CLASS V

ORDER 6

GREAT SUN-DEW



DROSĒRA ANGLĪCA

CLASS V

ORDER 7

MOUSE-TAIL



MYOSŪRUS MINĪMUS

HEXANDRIA.

CLASS VI.

SIX STAMINA.

This Class has six Orders.

ORDER I.

BARBERRY. This shrub is common in hedges, flowering in June, and bearing bright, red, pendulous berries in autumn.

MONOGY-
NIA.

—
One Pistil-
lum.

This plant is highly interesting from the peculiar property of the stamina of its blossoms; they exhibit one of the most remarkable instances of irritability known in vegetable life. If the filaments, when lying under the petals of the flower, are touched at the base in the slightest degree, they immediately spring and embrace the pistillum: a fact extremely curious, and the apparent use of this property is, that when insects go in search of honey, secreted in glands at the base of each petal, this irritability is excited to scatter the pollen upon the stigma, that the seed might be properly fertilized: but no sooner are we satisfied with this solution, than we find another fact that destroys our theory, for in the *Cistus Helianthemum*, the stamina in their natural position closely

surround the pistillum; and when touched, they all recede from it; so imperfect is our knowledge of the agency of nature.

It is commonly said that the Barberry tree prevents the ears of corn in its neighbourhood from being productive. This opinion prevails as well on the Continent as in England. Whether there be any truth in it I am not able to say, it is very generally believed; and therefore, however improbable, ought not to be hastily rejected; but M. Broussonet, a celebrated French naturalist, who has paid particular attention to whatever is connected with agriculture, has asserted, that it is a prejudice void of foundation.

ENGLISH HYACINTH. Of this genus there are seventeen species. This is an English plant, commonly called Blue Harebell, and is the same flower which Shakespeare alludes to, in the following passage in Cymbeline:

Thou shalt not lack
 The flower, that's like thy face, pale primrose; nor
 The azur'd hare-bell, like thy veins; no, nor
 The leaf of eglantine, whom, not to slander,
 Out-sweeten'd not thy breath.

The Hyacinth of our garden, or that which ornaments our sitting rooms early in the spring, is the *Hyacinthus orientalis* of Linnæus. These flowers have a very sweet scent, and by the Dutch gardeners are distinguished into classes by their colours; the principal of which are, blue, red, purple and white,

mixed with yellow; they are subdivided from the shades of each colour, as of the blues; deep blue, violent blue, blue purple, porcelain blue, agate blue, sky blue, French grey, &c. : also from the mixtures of different colours or shades, as light blue with a deep blue, or purple eye; white, with a rose-coloured, blue, purple, or yellow eye; white and red of different shades, mixed; yellow, with a purple eye, &c. Some also have their petals tipped with a paler or a deeper colour; and all these varieties are found both in single and double flowers; but the latter only are now esteemed and valued among florists, and their estimation, is in proportion as they are large and double, and the colours various and brilliant.

Among botanists, double flowers are considered as monsters of nature, and are wholly disregarded. The Hyacinth was once esteemed in its single state for the regularity and equality of its petals, and the uniformity of the colours; and a double Hyacinth was then no more valued than a double tulip is now. A celebrated Dutch Florist, of the name of Peter Voorhelm, of Haarlem, was accustomed to throw them out of his collection; till by accident, at the decline of the season, a bulb with double flowers attracted his attention, which he cultivated and increased by off-sets: florists became fond of it, and he sold it for a good price; this stimulated him to cultivate Hyacinths with double flowers, which he now preserved with as much care as he had shewn before in rejecting them: and from this time the greatest attention

has been paid at Haarlem to the raising and cultivating this flower; and such has been the rage for it, that from one to two thousand Dutch florins has been given for a single root.

At this day the Haarlem gardeners distinguish upwards of two thousand Hyacinths by name, and generally publish catalogues of them from year to year. New varieties are annually produced, and whole acres together are covered with this flower in the circuit of that town only.

These are the principal properties of a fine double Hyacinth, according to the present taste of florists.

1. The stalk should be tall, strong and upright; the flowers or bells, as the florists call them, should be sufficiently numerous, each suspended by a short strong peduncle in a horizontal position; the whole having a compact pyramidal form, with the crown or uppermost flower perfectly erect.

2. The flowers should be large and well filled, with broad bold petals, appearing to the eye rather convex than flat or hollow: they should extend to about the middle of the *scapus*, or stalk.

3. The plain colours, which should be clear, and bright, and strong, are generally preferred to pale colours; such as are mixed, should blend with elegance.

The soil on which the Hyacinth succeeds best is a loamy fresh rich earth, which is the character of the land in the neighbourhood of Haarlem; but the finest and most healthy bulbs are now produced in Flanders and the Netherlands, transplanted from Haarlem;

fresh soil being more favourable to their health and vigour.

After a long repetition of the same kind of crop, cultivated land, however good, seems to tire of the produce. Hyacinth bulbs are every year brought to England from the Continent, as they are found to degenerate with us; and a skilful gardener can immediately decide whether the bulbs imported, grew in the plantations of Haarlem, or in fresh land; for under the outermost covering of the Haarlem bulbs there is to be perceived, with close attention, a fine film impregnated with animalculæ, which does not exist in those bulbs which are produced in plantations, where they have been only recently propagated.

When Hyacinth bulbs are placed to grow in water, October and November are considered the most proper months to put them into glasses. The bulb glass should be filled with water so far only, as that the base of the root may be immersed in it, and the water changed, once in about three weeks.

The Tulip is also of this Order, not less admired and valued by Dutch florists; the beauty of which consists in the petals being rounded at the ends, and in the depth, brilliancy, and distinctness of the colours.

PINE-APPLE, *Bromelia ananas*. This delicious fruit is of this Class and Order, and appears to have been cultivated in England in our hot-houses as early as 1690.

There are many varieties of this fruit, and if in

their native country, seeds were sown frequently, the varieties might be as numerous as those of apples and pears with us. The variety, called the Queen Pine, is the most common in Europe; but the sugar-loaf Pine is preferable being, larger and better flavoured.

AMERICAN ALOE, *Agave Americana*, is of this Class and Order. This plant was first known to blossom in England, in the year 1729, in the garden of a Mr. Cowell, at Hoxton (near London); another blossomed in 1737, at Eaton Hall, in Cheshire, of which there is a print, and by the inscription on it, the stem-bud appeared on the 15th of June, and grew five inches a day for some weeks; the flower branches were perfected in twelve weeks, and then ceased to grow for a month, whilst the buds were forming. It produced 1050 flowers. One that blossomed in Leyden, in 1760, produced more than 4000 flowers.

It is a common opinion that this Aloe blossoms only once in a hundred years; but this is a vulgar error. The time of its flowering depends on its growth, so that in hot countries, where it grows fast and expands many leaves every season, it will blossom in a few years; but in colder climates, where the growth is slow, it will be much longer before its stem shoots up: when the stem is vigorous, it usually grows to more than twenty feet in height: in the king of Prussia's garden one grew to forty feet, the highest of which there is any account.

British Plants of this Order.

Botanical Generic Names.	Common Names.
2 ACORUS	1 MYRTLEGRASS
45 ALLIUM	7 GARLICK
34 ANTHERICUM.....	3 SPIDER-WORT
13 ASPARAGUS ^y	1 ASPARAGUS
1 BERBERIS	1 BARBERRY
11 CONVALLARIA.....	4 LILY OF THE VALLÉY
3 FRANKENIA.....	2 FRANK-WORT
5 FRITILLARIA.....	1 FRITILLARY
1 GALANTHUS	1 SNOWDROP
17 HYACINTHUS	2 HYACINTH
20 JUNCUS	18 RUSH ^z
4 LEUCOJUM	1 GREAT SPRING SNOW- DROP
15 NARCISSUS.....	3 DAFFODIL
35 ORNITHOGALUM	3 BETHLEM-STAR
2 PEPLIS.....	1 PURSLANE
22 SCILLA	3 STARRY HYACINTH
5 TULIPA	1 TULIP

^y Asparagus was so much esteemed by the ancient Romans, and so highly cultivated, that in the neighbourhood of Ravenna, Pliny says, three were sufficiently large to weigh a pound: “Ecce altiles spectantur asparagi. Et Ravenna ternos libris rependit.” Lib. xix. c. 4.

^z Of the twenty-nine species of Rush, all are of this Class and Order, except *Scirpus lacustris* and *Juncus conglomeratus*, which are of the Class and Order Triandria monogynia.

ORDER 2.

No British Plant of this Order.

DIGYNIA.

Two Pistilla.

RICE. The native place of Rice, like the other sorts of grain in common use, is unknown; Linnæus has made it a native of Ethiopia, but has not given his reason for that opinion. It is cultivated in great plenty all over India, where the country will admit of being flooded; in the southern provinces of China, in Cochinchina, Cambodia, Siam, Japan, &c. In Japan it is very white, and of the best quality.

In the hilly parts of Java, and in many of the eastern islands, rice is planted upon the sides of hills, which can only be watered by rain; it is, however, planted at the beginning of the rainy, and reaped in the beginning of the dry season; and is called by the natives *Paddy Gunung*, which signifies Mountain Rice. In the western part of India this kind is entirely unknown. It is however well known in Cochinchina, where it thrives in dry light soils, mostly on the sides of hills; not requiring more moisture than the usual rains and dews supply, neither being frequent at the season of vegetation.

Of this genus there is but one species; but the varieties of Rice, as of other cultivated grain, are innumerable.

ORDER 3.

TRIGYNIA.

Three Pistilla.

MEADOW SAFFRON is produced in great plenty at Abberley, in Worcestershire, and various

parts of England. It exhibits a mode of fructification scarcely to be paralleled among British plants. The flowers appear very late in the autumn; the germen afterwards remains latent underground, quite close to its bulbous root, till the following spring, when the seed vessel rises above the surface, with several long upright leaves, and the seeds are ripened about June; so that at first sight the seed would seem to be ripened before the flower was produced; but on more accurate investigation, it is found to conform, in common with other plants, to the established laws of nature, though in a manner unexpected, and almost peculiar to itself. The juice of the root is so acrid, as to produce violent effects on the human constitution; this quality also prevents it from being eaten by subterranean insects; and thus the seed-vessel is protected during the winter.

Linnæus observes that the defoliation of deciduous trees is announced by the flowering of the Meadow-Saffron; of these, the Ash is the last that puts forth its leaves, and the first that loses them.

British Plants of this Order.

Botanical Generic Names.	Common Names.
36 RUMEX ^a	12 DOCK
1 TOFIELDIA	1 MARSH TOFIELDIA
3 TRIGLOCHIN	2 ARROW-GRASS
3 COLCHICUM	1 MEADOW SAFFRON

^a Rumex ascetosa and acetosella have the stamina growing on one plant and the pistilla on another, and therefore these two species strictly belong to the Class Dioecia.

ORDER 4.

No British Plant of this Order.

TETRAGY-
NIA.

Four Pistilla.

PETIVERIA^b is a shrubby plant, common in the low lands in Jamaica, and in most of the islands in the West Indies, where it thrives in a dry, gravelly soil, in shady situations. It has the property of enduring much drought, and remains green when other vegetation is burnt up; the cattle then feed upon it, and it gives to their milk the taste of garlic. In this country it blossoms in June.

ORDER 5.

No British Plant of this Order.

HEXAGY-
NIA.

Six Pistilla.

WATER ALOE. This is an Order in Schreber and Willdenow. This plant is a native of Egypt and

^b This plant was named by Plumier, in honour of James Petiver, who spent much of his time in the pursuit of natural knowledge. He was apothecary to the Charter-house, and died in 1718, but the time of his birth is not accurately known. He was Fellow of the Royal Society, and made so great a collection of rare and curious plants, animals and insects, that Sir Hans Sloane, who afterwards purchased it, offered him in his life time 4000l. for his collection. Petiver published, 1. *Musæi Petiveriani Centuriæ decem*, svo.; 2. *Gazophylacii Naturæ et Artis decadis decem*, folio; 3. *A Catalogue of Plants found on the Mountains about Geneva*; 4. *Pterigraphia Americana*, folio. He was the author of several other pieces, and communications, to Ray and others.

the East Indies, and is a genus consisting of the Linnæan *Stratiotes alismoides*. This species is called *Damasonium indicum* by Dr. Roxburg, from whose work of Coromandel plants, the figure here introduced is copied.

As the classification of this system is expressly made on the principles of Linnæus, I have not thought it proper to use any other name for this plant than the one by which it is to be found in his works, or I should have been glad to have adopted Dr. Roxburg's, to avoid the appearance of a mistake, having introduced a *Stratiotes* in the Class and Order, Polyandria hexagynia.

ORDER 6.

GREAT WATER-PLANTAIN. Of this plant there are five species; four of English growth. This blossoms in July and August, with numerous white and purplish flowers; it grows wild in the Lake of Keswick, and some lakes in Wales. I have seen it in the neighbourhood of Ross and at Brockleton in Worcestershire. This is the only Genus of this Order.

POLYGY-
NIA.

Many Pis-
tilla

CLASS VI

ORDER 1

COMMON BARBERRY



BERBĒRIS VULGĀRIS



Blue Harbell

HYACINTHUS NON SCRIPTUS

VI
I

CLASS VI

ORDER 2

RICE



ORYZA

CLASS VI

ORDER 3

MEADOW SAFFRON



COLCHICUM AUTUMNĀLE



CLASS VI

ORDER 4

PETIVERIA



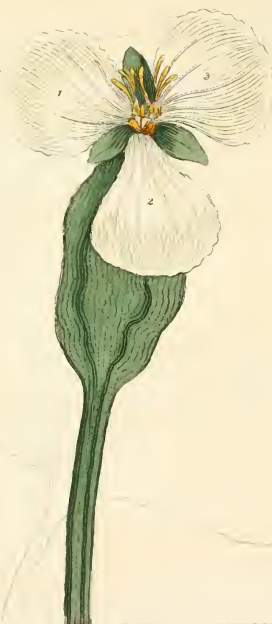
PETIVERIA ALLIACEA

CLASS VI

ORDER 5

WATER ALOE

Petals
1, 2, 3.



STRATIOTES ALISMOIDES

CLASS VI

ORDER 6

GREAT WATER-PLANTAIN



ALISMA PLANTAGO

HEPTANDRIA.

CLASS VII.

SEVEN STAMINA.

This Class has four Orders.

ORDER I.

CHICK-WEED WINTER-GREEN, is found in dry woods and turfey heaths in the north of England, but more particularly in Scotland. It is a plant chiefly confined to the most northern regions. I have, however, seen it grow very flourishingly in a garden at Clapham.

MONOGY-
NIA.

One Pistil-
lum.

Linnaeus was exceedingly delighted when he discovered it in his Lapland tour, probably from its being the only Lapland plant of the seventh class, serving to complete the uniformity of his system. This is a very small Class, and the *Trientalis* is the only Genus we have in it, of which there is but this one species. The Horse-chesnut-tree is also of this Class; though, now common throughout England, it is a native of Mount Pindus, in Greece.

ORDER 2.

DIGYNIA.
 ———
 Two Pistilla.

LIMEUM, an African genus, is the only plant of this Order, but there is no specimen, nor any representation of it, in England.

ORDER 3.

TETRAGYNIA.
 ———
 Four Pistilla.

LIZARD'S TAIL. This plant is a native of Virginia; it is perennial, generally trailing, and seldom rising more than two feet high. It blossoms in July, but does not produce seed in England. The stalk decays in the autumn.

ORDER 4.

HEPTAGYNIA.
 ———
 Seven Pistilla.

ROUND-LEAVED SEPTAS is a native of the Cape of Good Hope; it is a perennial plant, the only Genus of this Order, of which there is only this one species; it blossoms in August and September. According to Linnæus it is remarkable for the number seven; having the calyx in seven deep segments, seven petals, seven germens, and consequently seven capsulæ. The English specific name *Round-leaved*, is from the general character of the leaves at the bottom of the flower-stem, which there was no room to introduce in the annexed figure.

CLASS VII

ORDER 1

CHICK-WEED WINTER-GREEN



TRIENTĀLIS EUROPĒA

CLASS VII

ORDER 3

LIZARD'S TAIL



CALYX 3
Antheris

SAURURUS CERNUUS

CLASS VII

ORDER 4

ROUND-LEAVED SEPTAS



SEPTAS CAPENSIS

OCTANDRIA.

CLASS VIII.

EIGHT STAMINA.

This Class has four Orders.

ORDER I.

NASTURTIIUM. Of this genus there are five species: this is a native of Peru, and is said, by Linnæus, to have been first brought into Europe in the year 1684. It begins to blossom in July, and continues till the approach of winter.

MONOGY.
NIA.

One Pistil-
lum.

The flowers, in the month of June and July, emit sparks or flashes in the morning before sun-rise, and also during twilight in the evening, but not in total darkness. This curious phenomenon was discovered by a daughter of Linnæus, who first shewed it to her father, and to M. Wilcke, a celebrated electrician, who believed the scintillations to be electric.

SCARLET FUCHSIA, *Fuchsia coccinea*. This elegant shrub is a native of Chili, and grows to the height of six or seven feet. It was first cultivated in England in 1788 by Lee and Kennedy. It produces rich pendent blossoms through most of the summer; the calyx is of a beautiful red colour, and the

petals in the centre of the flower somewhat resemble a small roll of the richest purple-coloured ribbon.

CROSS-LEAVED HEATH, *Erica tetralix*. This is one of the four species indigenous to Great Britain, and is easily distinguished from the others by its flowers growing in pendulous clusters on the tops of the stalks, and by its leaves, which grow by fours on the stem, and form a kind of cross; they are edged with stiff hairs, each of which has a small globule at its extremity. Ireland produces one species; but of this numerous and beautiful genus the greater part are natives of the Cape of Good Hope. Not one is known to be indigenous to the vast continent of America; nor, as far as we know, are any produced in China or New Holland.

The heaths, in general, are not very fragrant, but the *Erica odorarosea* has a scent similar to the 'Atar of Roses, and the *Erica tenui flora* has the odour of a carnation.

BALSAM OF GILEAD AMYRIS, *Amyris Gileadensis*. According to Bruce, this tree grows to the height of fourteen feet; its branches are numerous; the wood is white, soft, and covered with a smooth ash-coloured bark; the leaves are small and few, commonly consisting of one pair of pinnæ with an odd one at the top, and of a bright green colour. The Corolla consists of four petals; the fruit is of the drupaceous kind, roundish, opening by four valves, and containing a smooth nut.

Bruce says that this tree is a native of Abyssinia, growing behind Azab, all along the coast to the Straits of Babelmandel. Theophrastus, Dioscorides, Pliny, and even the Arabian physicians, supposed this Balsam to be the produce of Judea only, and hence it seems to have received the name of Balsamum Judaicum, or Balm of Gilead. The Balsam is collected from the tree by making an incision with an axe,^c when this secretion is in its strongest circulation in July and August and the beginning of September, and collected into small earthen bottles suspended to receive it. The quantity to be obtained from each tree is so small (three or four drops daily on the average, the most fertile tree never yielding more than sixty in that time)^d and the collecting it so tedious and troublesome, that the genuine Balsam is very scarce, and rarely if ever exported as an article of commerce. Lady Mary Wortley Montague says, that when she resided in Constantinople it was not then to be procured without difficulty.^e

The best balsam, according to Alpinus, is at first turbid and white, of a very strong pungent scent, like that of turpentine, but much sweeter and more fragrant, and of a bitter, acrid, astringent taste: on being

^c Tacitus says, this tree was so averse to iron, that it trembled upon a knife being laid near it; and therefore it was pretended, that the incisions should be made with ivory shells, glass, or stone.

^d See Gerlach's Tagebuch's *Reise nach Constantinopel*, p. 217.

^e See Lady M. W. Montague's letters.

kept for some time, it becomes thin, limpid, light, of a greenish hue, and then of a gold yellow, after which it grows thick like turpentine, and loses much of its fragrance. Bruce says, that the odour at first is violent, and strongly pungent, giving a sensation to the brain like that of volatile salts, when rashly drawn up by an incautious person.

On the authority of scripture it would seem that the estimation of this Balsam is of the highest antiquity, for Balm and Myrrh were carried by the Ishmaelites to Egypt,^f and the high opinion entertained of its virtues may be inferred from this verse in Jeremiah; “Is there no balm in Gilead? is there no physician there? why then is not the health of the daughter of my people recovered?”^g Among the Eastern nations it is still in the highest repute for its medical properties, but in Europe it is not believed to possess any miraculous power, except now and then to enable an impostor to amass a large fortune from the poor, the illiterate, and the credulous.

British Plants of this Order.

Botanical Generic Names.

Common Names.

20 ACER.....	2 MAPLE
4 CHLORA	1 YELLOW-WORT
28 DAPHNE	3 MEZEREON
14 EPILOBIUM.....	7 WILLOW-HERB

^f Genesis, c. xxxvii. v. 25.

^g Jeremiah, c. viii. v. 22.

Botanical Generic Names.	Common Names.
ERICA ^h	5 HEATH
11 CENOTHERA	2 TREE-PRIMROSE
11 POPULUS	3 POPLAR
27 VACCINIUM	4 WHORTLE-BERRY-SHRUB

ORDER 2.

No British Plant of this Order.

UPRIGHT GALENIA. This plant was named by Linnæus to commemorate the celebrated physician Galen, who flourished in the second century.ⁱ It is a shrubby plant, a native of the Cape of Good Hope, and flowers from June to August.

DIGYNIA.
Two Pistilla.

ORDER 3.

CLIMBING BUCK-WHEAT is commonly known by the name of Black Bind-weed, probably from the dark colour of its seeds. It is a very com-

TRIGYNIA.
Three Pistilla.

^h The number of different species of Heath are not ascertained. Mess. Lee and Kennedy have in their garden at Hammersmith 430 species or varieties of this Genus.

ⁱ Claudius Galen was a native of Pergamus, in Asia. He died A.D. 140, in the seventieth year of his age.

mon plant among corn and in garden hedges. This is the only english Genus of this Order of which Professor Martyn enumerates thirty-six different species, of which ten are indigenous. It blossoms from June to September; the stem twists round every thing in its way. It is a genus whose species differ in the number of their stamina, and pistilla; yet, as Dr. Smith observes, no species can be more naturally allied; therefore the Linnæan system here, as in many other cases, claims the indulgence of the scientific Botanist, whose principles are founded on natural affinities.

A plant that grows with a twining and spiral stem invariably turns in the same direction. The Kidney-bean and the Convolvulus turn with the apparent motion of the sun, while the Hop and the Honey-suckle take a contrary direction; and any act that can be employed to change this law of nature is injurious to the plant, and, if persevered in, destructive. The Marsh-mallow-leaved *Hermannia* is a curious instance of two flowers growing on the same stem, which have a spiral character, but which are invariably twisted in opposite directions to each other.

ORDER 4.

TETRAGY-
NIA.

Four Pistilla.

TUBEROUS MOSCHATELL. This curious plant, with green petals, of which there is but this one species, has been found wild in many parts of the

kingdom, and at Bockleton, in Worcestershire, by Miss M. It blossoms at the end of March, or the beginning of April, and the berries ripen in May, soon after which the leaves decay. The leaves and the flowers smell like musk, from which circumstance it has been sometimes called Musk Crow-foot.

HERB PARIS, *Paris quadrifolia*. Few plants are more readily distinguished than this, by the proportion and regularity of all the parts. The leaves, usually four in a cross, or sort of whorl. The Calycine leaflets four, Petals four, Stamina eight, Pistilla four, and a berry obscurely four-grooved, dark purple when ripe, containing six or eight seeds. It is a good and conspicuous example of a flower with grass-green petals. It is a native of shady woods, rare in some counties, and not very common in any, but in Herefordshire it is one of the ornaments of my own paternal farm.

British Plant of this Order.

Botanical Generic Names.

Common Names.

1 ADOXA.....	1 MOSCHATELL
2 ELATINE	1 WATERWORT
2 PARIS.....	1 HERB PARIS

CLASS VIII

ORDER 1

NASTURTIIUM



TROPEŒOLUM MAJUS



*Colours Calyx
Scarlet*

Scarlet Fuchsia

FUCHSIA COCCINIA
VIII
1



Cross-leaved Heath

ERICA TETRALIX
VIII
7



Balsam of Gilead tree

AMYRIS GILEADENSIS
VIII
7

CLASS VIII

ORDER 2

UPRIGHT GALENIA



GALENIA AFRICANA

CLASS VIII

ORDER 3

CLIMBING BUCK-WHEAT



POLYGÖNUM CONVULVULUS

CLASS VIII

ORDER 4

TUBEROUS MOSCHATELL



ADŌXA MOSCHATELLĪNA



Hort Paris

P̄ARIS QUADRIFOLĬA
VIII
4





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